VOLUME 39 | NUMBER 3 | MARCH 2024

PRI

PERFORMANCE RACING INDUSTRY MAGAZINE

PODIUM PATHWAY

WHY HPDEs SERVE AS ROAD RACING'S PRIME ENTRY POINT

INSIDE

SPORT COMPACT OVAL TRACK | PARTS CLEANING EQUIPMENT
ADAPTIVE RACE CARS | CHASSIS DYNOS | & MORE

ULTRASONIC LLC
Professional Cleaning Solutions

GET CLEAN PARTS FAST

The Professional's Choice For Ultrasonic Cleaning

- Ultra-engineered detergents for each material and application
- Ultra-efficient dual offset transducers & agitation optimize cleaning
- Ultra-ecofriendly filtration system extends detergent life
- Ultra-power minimizes cleaning time
- Ultra-quick path to Return On Investment

Ultra 3200FA

32" Tank Length

Finance with APPROVE — As low as $411/mo

LABOR SAVINGS @$75/Hour
1 Month: $1,500, 1 Year: $18K
INCREASE PROFITS!

Watch Me Clean!

Let's talk about your precision cleaning needs today!

513.502.9746, info@ultrasonicllc.com

See ultrasonic in action: UltraSonicLLC.com, shop online: shop.ultrasonicllc.com

YOUR COMPETITIVE ADVANTAGE

TURN14 DISTRIBUTION x ENERGY SUSPENSION PERFORMANCE POLYURETHANE

HYPER-FLEX MASTER BUSHING SET - OFF-ROAD APPLICATIONS

Turn 14 Distribution is the premier B2B source for Energy Suspension's performance polyurethane components. As a valued dealer, we provide you with access to industry-leading customer support, real-time inventory, flat rate shipping from our strategically located distribution centers, and 100% hassle-free returns.

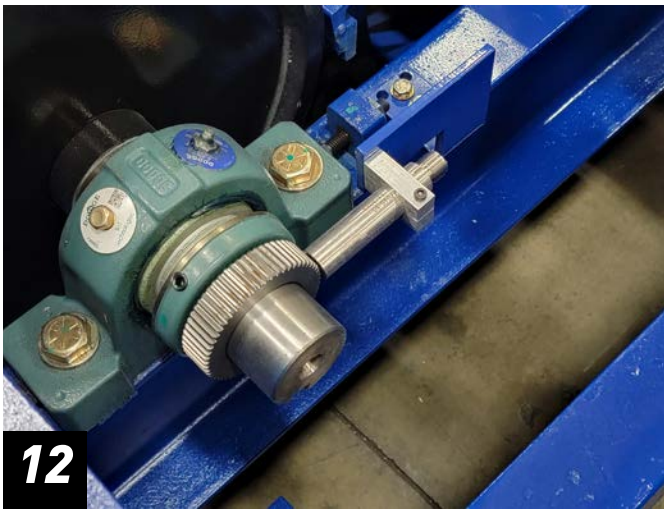
100% WHOLESALE | TURN14.COM

CONTENTS

MARCH 2024 VOLUME 39, NUMBER 3

performanceracing.com | mail@performanceracing.com

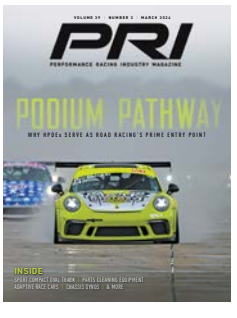
10


12


14


18


20



ON THE COVER
Cover Photography:
Victor Newman, Courtesy of Porsche Club of America

Be last.

Being the last on the brakes isn't just a test of skill, it's also a test of how much confidence a driver has in their brakes.

With unique Fade Resistant Technology™, Halo P1 has a far lower and far more stable level of compressibility over a wide temperature range than the competition—giving drivers the confidence that their brake fluid will perform as well on the last lap as the first.

Formulated for the art of braking.

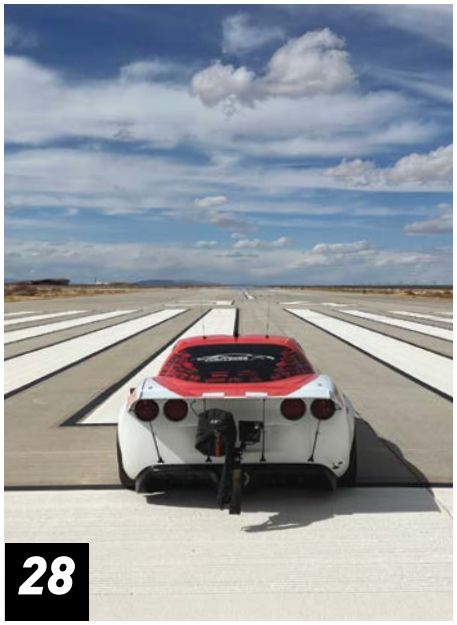
halo.
By Orthene.

halobyorthene.com

CONTENTS

MARCH 2024 VOLUME 39, NUMBER 3

performanceracing.com | mail@performanceracing.com



28

38

FEATURES

ROAD RACING COVERAGE

58

74

ROBINS™
SINCE 1983
Signature brand
-0+ Exactly

THANK YOU

FOR VISITING US AT

PRI SHOW
DECEMBER 7-9, 2023, INDIANAPOLIS, U.S.A.

It was pleasure and honour for us to have you at our booths

ROBINS SINCE 1983 -0+ Exactly
40 Years of Excellence 1983 2023
/robinsmachines | rc@RobinsMachines.com www.RobinsMachines.com
youtube.robinsmachines.com

Eastern U.S.A
MEC CNC
Anthony Usher (949) 800-7176
anthony@meccnc.com | www.meccnc.com

Western U.S.A
Hopper HOPPER EQUIPMENT
Jeff Murchison (909) 226-9922
Jeff@HopperShop.com | www.HopperShop.com

FROM THE EXECUTIVE EDITOR

MEREDITH KAPLAN BURNS
meredithb@performanceracing.com

"Don't take 'no' for an acceptable answer" was a valuable lesson I learned years ago under the tutelage of PRI founder Steve Lewis. I had been tasked with finding information from a company that could help Steve's No. 9 midget team. I had to find a way to make it happen.

Along my journey to get that "yes," I dealt with people who didn't understand the purpose of my request, others who were apathetic, and one who was just plain incompetent. But I persevered, and finally the gates opened and I spoke with the correct person who granted the request.

My joy was short-lived because as a result of that initial success, I was then tasked with obtaining that golden "yes" from other people for various reasons. Along the way, I learned a valuable lesson. Just like a driver determined to finish first at the end of a race, if I was blocked, then I would try to go left to get around. If that didn't work, I would maneuver right. In racing, we find ways to get by the car in front for the win, even if some contact occurs during the pass.

In this month's Special Report, the same theme applies as we explore adaptive race cars. These drivers experienced some shut doors in terms of overcoming physical challenges, including paraplegia, loss of limbs, and even blindness. (Yes, several blind race car drivers compete, and they are doing quite well with the help of advanced technology.)

In fact, 2005 ADRL Pro Nitrous world champion Dan Parker, who became blind after a testing accident in 2012, was so distraught fearing that he could never drive a race car again that he considered ending his life. However, he dreamt about being able to race again. Dan reached out to a friend who worked at Boeing who then developed a guidance system specifically for this purpose. Dan's determination to not accept the challenges he faced allowed him to earn the distinction of setting the "Fastest Speed for a Car Driven Blindfolded," by the Guinness Book of World Records in 2022. Although he wasn't blindfolded, this is the closest available category from Guinness.

Robert Wickens, an IndyCar phenom, faced a similar challenge after he suffered a spinal cord injury from a racing accident in 2018. His battle to regain his ability to walk is well-documented, and he was even able to dance with his bride at their wedding reception the following year. In 2023, Robert and codriver Harry Gottsacker won the IMSA Michelin Pilot Challenge TCR championship in their Bryan Herta Autosport No. 33 Elantra N TCR. Established technology combined with custom engineering allowed Robert to use hand controls on the steering wheel to drive. You can see this technological marvel on page 28 of our Special Report.

Whether at a race this weekend or facing an important business decision, make sure to move around those obstacles to achieve the "yes" you seek. PRI

PRI MAGAZINE

GENERAL MANAGER
Jim Liaw

EDITORIAL

EDITORIAL DIRECTOR
Jason Mulroney

EXECUTIVE EDITOR
Meredith Kaplan Burns

SENIOR EDITOR / SOCIAL MEDIA MANAGER
Christen D'Alessandro

CONTENT EDITOR - DIGITAL
Laura Pitts

COORDINATING EDITOR
Jack Haworth

ASSOCIATE EDITOR
AJ Hecht

CONTRIBUTORS
Drew Hardin, Bradley Iger, John F. Katz, Jim Koscs, Mike Magda, Zachary Santner, Steve Statham, Jeff Zurschmeide

SALES

VICE PRESIDENT OF SALES
Warren Kosikov

SENIOR SALES DIRECTORS
Alan Josse
Brian Paik

INDUSTRY SALES DIRECTORS
Becca Butler
Jeff Dahlin
Scott Hartwick
Celina Kluba
Monica Terlouw
Willie Yee

SALES ASSISTANTS
Mary Crum
Madison Danna
Karina Mendez
Lisa Schafer

PRODUCTION

GROUP OPERATIONS MANAGER
Janet Lee

ASSOCIATE ADVERTISING COORDINATOR
Abbie Goshen

ART

SENIOR ART DIRECTOR MANAGER
Paul Graff

GRAPHIC DESIGNERS
John Cabral
Jeffrey Chhan

PHOTOGRAPHERS
Michael Allio, Sam Bagnall, Michael Berchak, Doug Berger, James J. Black, Meredith Kaplan Burns, Davide De Martis, Chris Graythen/Getty Images, Carl Larson, Michael L. Levitt, Jason Mulroney, Victor Newman, Jared C. Tilton/ Getty Images, Bruce Vinal Jr., Michael Wood

ACCOUNTING

PAYABLES

Performance Racing Industry (ISSN 1045 3024) is published monthly in the interest of the growth and development of the racing market, consisting of manufacturers, retailers and racing participants. *Performance Racing Industry* can be contacted at 27081 Aliso Creek Rd, Suite 150, Aliso Viejo, California 92656, 949/499-5413, Fax 949/499-0410. Periodicals Postage paid at Laguna Niguel, CA 92677, and additional mailing offices. **Postmaster:** Send address change to *Performance Racing Industry*, 27081 Aliso Creek Rd, Suite 150, Aliso Viejo, California 92656.
Printed in U.S.A.
PM # 40702022, Return Undeliverable Canadian Addresses to: Station A, PO Box 54, Windsor, ON N9A 6J5. Email: cpcreturns@wdsmail.com

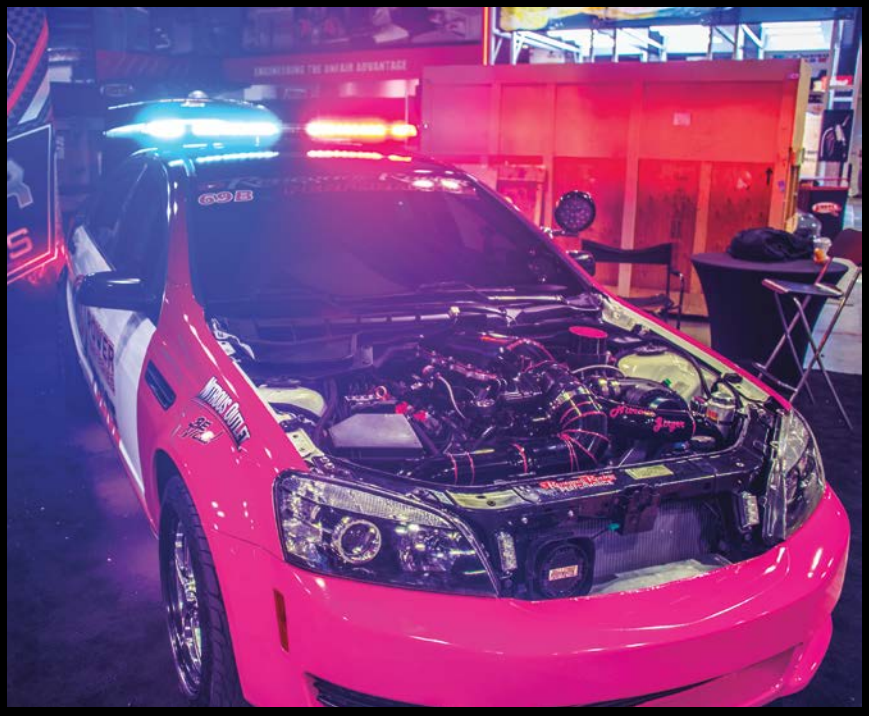
...BUT YOUR ENGINE IS CLEAN

Schaeffer's®

- Eliminate Engine Varnish
- Reduce Deposit Buildup
- Increase Performance
- Decrease Operating Temperatures
- Conquer Your Home Track

FEATURED VEHICLES

One car in this month's profile of popular race vehicles is street legal, while the other was driven on the street while not street legal, which landed the driver in the local jail.



2012 CHEVROLET CAPRICE

BREONNA WEST | CLARKSVILLE, TENNESSEE

RACE SERIES/CLASS: Women & Wheels

ENGINE: 408 LS built by Texas Speed & Performance

CAR: Built by Renegade Racing in Clarksville, Tennessee

FEATURES: ProCharger F1A, 2-Stage Nitrous Outlet kit, XS Power battery, Tick Performance camshaft, wrapped by CWraps, Battle Born powder-coated TBM Brakes

FACTS: Breonna's husband, Thomas West, went to jail for driving the car on the street. It makes 1,750 whp.

2021 PORSCHE CAYMAN GTS 4.0L

KJ CRUMB | MINNEAPOLIS, MINNESOTA

RACE SERIES/CLASS: SCCA Class Super Street R (SSR)

ENGINE: Mid-engine, 4-liter flat-six, naturally aspirated

CAR: Work by RENNtech and Further Performance

FEATURES: Toyo R888R DOT Competition tires, Porsche dual-clutch transaxle

FACTS: In 2023, Crumb won a regional series championship and a national championship with this car, and it's street legal.

ASK THE EXPERTS

CHASSIS DYNO MAINTENANCE

These tips can help prevent downtime as well as the potential need for costly repairs down the road.

By Bradley Iger

Like any sophisticated mechanical device, chassis dynos require routine care to ensure consistent and accurate performance. But while some of this maintenance should be performed in scheduled intervals, Michael Caldwell of Mustang Dynamometers in Twinsburg, Ohio, said that maintaining some good habits on a day-to-day basis can help address some common problems before they develop.

"It's important to have a very organized dyno room. You want to know where everything is because things can get into the dyno and cause problems, and if the room is disorganized, that might go unnoticed," he explained. "If it's in a pit, you want to make sure you pull the plates off and use a shop vac to get pieces of paper, tools, and other debris out of there. It's really just a good idea to clean your dynamometer and dynamometer area on a regular basis."

Allison Blackstein of Dynocom Industries in Fort Worth, Texas, also noted that cleaning the dynamometer and surrounding area on a regular basis is important for another reason that should definitely be on the radar of dyno operators with pit installations.

"We visited a customer of ours in Oklahoma recently who was having some unusual problems with his system," she said. "We took the car off, took the pit cover off, and got down in the pit, and we discovered that rats had chewed through a bunch of the wires. Rats love the insulation on the wiring, so you really have to stay on top of that."

With a pit installation, it's important to pull the plates off and clean down in the pit to get rid of paper or other debris. Dynocom's Allison Blackstein had a customer who found rats in the pit chewed through the wires. "Rats love the insulation," she said, "so you really have to stay on top of that."

Regular cleaning also provides opportunities to lubricate the bearings and eddy current brakes. "Make sure to use the lubricant that's recommended by the dyno manufacturer and follow the recommended lubrication schedule," Caldwell said. Owners should keep in mind that those schedules can vary widely depending on a dynamometer's design.

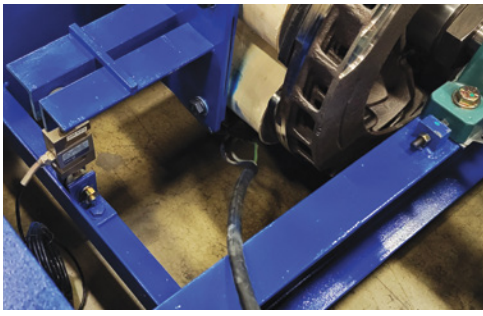
"Our dynos, for example, use Dodge bearings, and these bearings aren't really meant to be greased. They're designed to essentially run 24 hours a day, seven days a week for 20 years in industrial applications," said Blackstein. "They have Zerk fittings because people tend to get a bit anxious about not being able to grease the bearings if you sell them without those fittings. But there's not necessarily a need for it with this type of bearing, and you can definitely over-fill a bearing. Over-filling can cause grease to come out of the seals, which can create issues rather than resolving them."

Caldwell said that the electrical system that the chassis dyno is connected to can affect component longevity as well. "You should definitely be using a dedicated circuit. Most eddy current dynamometers have a separate circuit for the eddy current brake that runs off of a 240V single-phase circuit. You should have your electrician run a dedicated circuit for that, and you should switch that off at the breaker when you're not using it. That's going to minimize the chance for some kind of electrical damage from storms, which is the most common issue that we see." He also recommends using surge protection for all of the dyno's associated electronics, much like you would with sensitive electrical equipment at home.

BEYOND THE DYNO

Consistent performance also requires proper leveling, Blackstein said. "A lot of people say, 'My concrete is perfectly flat,' but there's no such thing as perfectly flat concrete. You have to make sure that it's not deflecting, so we provide shims with every chassis dyno, and they should be used wherever you can tap them in with a mallet."

S-beam load cell calibration should also be done on a routine basis, Caldwell told us. Operators should also be aware that, due to the forces that they're subjected to when used, these load cells typically need to be replaced every eight to 10 years in often-used dynamometers so that the dyno can continue to provide accurate results.



Load cells should be inspected and calibrated on a routine basis, said Michael Caldwell of Mustang Dynamometers. He recommends replacing the load cells every eight to 10 years.

Shown here is a Mustang Dynamometer speed sensor and toothed gear. Michael Caldwell said the gear should be "clean and free of any dust or tire debris." Also visible in the photo are pillow block bearings, which should be greased per the instructions that came with the dynamometer.

"There are folks out there who have been using the same load cell for decades," he said. "Bad idea. It may still seem to work, but the chances of it operating to as-new specifications are zero. You're putting tons of force on it over and over again, and that means it's not going to stay linear because the shape of it actually gets warped over time. It may seem to be working because it calibrates, but it's not linear anymore."

Blackstein recommends having a spare speed sensor on hand at all times. "Even a little flake of dirt on the reluctor wheel will cause issues."

Newer versions of these sensors are typically sealed, but dirt can find a way in anyway—especially on mobile chassis dynamometers. "This is the most important sensor on virtually any dyno," she added. "If you don't have the speed sensor, you don't have anything. So it's good to always have a backup available, just in case." PRI

SOURCES

Dynocom Industries
dynocom.net

Mustang Dynamometers
mustangdyne.com

EDITORS' CHOICE

Hundreds of new product announcements cross the desks of PRI editors each month. Following are our top picks for March.

By Mike Magda

SPARK PLUG WIRE SETS & HEI DISTRIBUTOR

SQR PERFORMANCE

flex-a-lite.com

Expanding beyond cooling products, Flex-A-Lite in Burlington, Washington, now offers performance ignition wire sets and an HEI distributor under the SQR Performance brand.

"SQR Performance is a new line of high-performance ignition products designed with the sportsman racer in mind," explained Cole Quinnell. He added that SQR Performance ignition wires have 150 degrees F better heat resistance on both the boots and the wire than some competing products, while delivering at least 50% less resistance for better performance.

The wire sets are offered in 8 mm and 8.5 mm in both universal and direct-fit for select applications. They come in a black-and-gray color combination and feature a suppression core with black silicone sleeves. The 8.5-mm wires feature a spiral-wound core and extra-thick molded boots. The kits are available with either straight or 90-degree boots.

The HEI distributor is a direct replacement for small and big block Chevy engines with the standard deck height. An all-new design, it features a CNC-machined cast-aluminum body, brass terminals in the cap, and an SQR Performance HEI ignition module. It also comes with a mild performance mechanical advance timing curve, and the vacuum advance is easily adjusted. The four-pin module provides high coil output and is constructed from solid state electronics.

BAJA ELIMINATOR RACING MUFFLER

VANCE & HINES

vanceandhines.com

Developed for Trophy Trucks and other off-road applications, the Baja Eliminator racing muffler from motorcycle specialist Vance & Hines in Santa Fe Springs, California, features stainless-steel construction and a rebuildable baffle core assembly.

"Our extensive research and experience in exhaust development was instrumental in finding the right combination of materials to address heat dissipation while maintaining weight savings, all without sacrificing power delivery," said Raphael Paula.

Baldi Racing first approached Vance & Hines with the need to reduce cabin noise in the truck without sacrificing power. The mufflers are made from 304 stainless steel, and the proprietary baffle core can withstand temperatures up to 1,800 degrees F.

"Our commitment to noise mitigation guarantees an optimal in-cabin experience, striking the perfect balance between power and comfort," said Paula.

The mufflers weigh 14 pounds each and feature ceramic-coated billet aluminum end caps. Inlet sizes range from 3.5 to 4.0 inch, and the mufflers are sold as a left and right pair.

"The inlet adaptor introduces a new level of versatility, allowing for a customized experience based on the header OD, and tailoring the system precisely to specific racing needs," added Paula. "Finally, the removable baffle core assembly ensures easy maintenance."

STEERING COUPLING DEVICE

LAPLANTE RACING PRODUCTS

laplanteracingproducts.com

Designed to reduce the severity of wrist injuries to drivers following a head-on impact, the Steering Coupling Device (SCD) from LaPlante Racing Products in North Scituate, Rhode Island, is welded to the steering shaft and can be adjusted for adult or youth drivers.

"The SCD is designed to always provide the driver with control of the race car," explained Paul LaPlante. "The device reduces the wrap effect of front-wheel impacts, without yielding control of the vehicle. Impacts aside, drivers experience no change in the drivability after the SCD is installed."

A common practice among drivers is to withdraw their hands from the steering wheel and hold them to their chest before an impact. With the SCD, drivers can maintain their grip on the steering wheel.

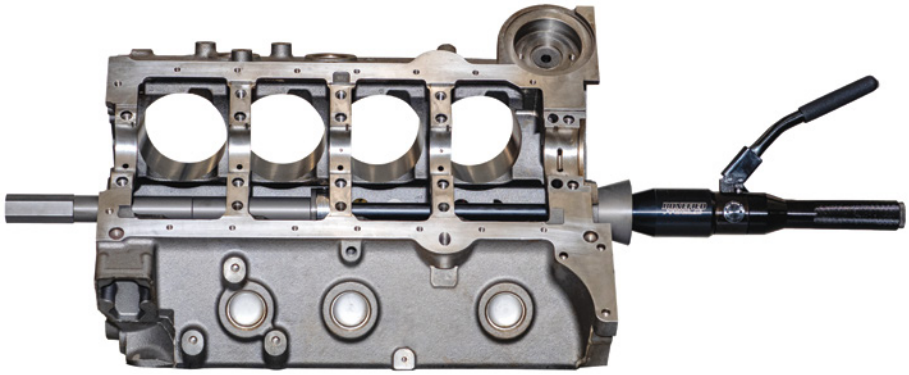
"I have witnessed and experienced wrist injuries attributed to open wheel and full-fendered racing," added LaPlante. "I became frustrated that this injury seemed to have no opportunity for remediation and impacted so many drivers for months after a race. So, I set out to conquer it."

The SCD is available in two versions: 6.0-inch long that weighs 2.4 pounds and has a 2.5-inch OD, and another that's 4.5-inches long, weighs .74 pounds and has a 1.5-inch OD. LaPlante advised that racers send the units back every five years to service the spring pack.

HYDRAULIC CAM-BEARING INSTALLATION TOOL

BONEFIED CUSTOMS

bonefiedtools.com



A big hammer is no longer necessary to install camshaft bearings. Bonefied Customs in Lowell, Michigan, has developed an installation tool that uses an integrated hand-operated hydraulic pump that gently inserts the bearing into its respective bore in the cam tunnel.

"It's very gentle on the bearings," said Jamie Hamm. "It maintains the bearing integrity. You almost never have to scrape the bearings."

The tool is designed with centering cones and a steel shaft to support the bearing mandrel. Spacers get the bearing in position one at a time for installation in the cam bore. With just a few pumps on the hand lever, the bearing is slowly moved into place. The tool is then quickly disassembled, and the spacers can be set up to install the next bearing.

"There are no distorted bearings, and they're all installed with the correct orientation to the oil holes," added Hamm.

Much of the tool is CNC machined from 6061 T6 aluminum and finished with a Type III hard-coat anodizing. The steel pieces are CNC machined and treated to a black-oxide finish. The tool can also be used to remove bearings. Currently, the kit comes with mandrels to support bearings for LS, big block Chevy, and small block Chevy engines. More mandrel sizes will be available soon.

PRO LEVEL OIL PUMP

SCHUMANN'S SALES & SERVICE

schumannoilpumps.com

The Pro level oil pump from Schumann's Sales and Service in Blue Grass, Iowa, is available for popular racing applications, and engine builders can customize their pumps with up to 14 patented options.

"Many racers attest our wet-sump-performance oil pumps have a dry-sump attitude," said Verne Schumann.

Perhaps the most popular option is the paddle-wheel design that improves the exit flow speed of the oil to the engine in gear-to-gear pumps.

"It makes a conventional gear pump behave like a rotary pump," added Schumann.

Another popular option is the 140 ball valve that is a significant improvement over the factory cup-valve system by reducing oil foaming and yielding a lower oil temperature. If the factory cup valve system is retained, adjustable quick-change color-coded springs are available to control oil volume and pressure.

Additional modifications like oil-slot lubrication for the idler shaft and the driven shaft are also available.

Finally, all pumps are supplied with a copper mount gasket to prevent oil leakage and aeration foaming of oil supply to the engine. The gasket seals up scratches in the machined surfaces or corrects misalignment during mounting.

BBC EIGHT-STACK EFI INTAKE MANIFOLD

SPEEDMASTER

speedmaster79.com

A new downdraft eight-stack EFI intake manifold for big block Chevys is now available from Speedmaster in Rialto, California. "Thanks to the individual throttle body EFI system, racers can experience crisp throttle response and stable idle, essential for both street and track performance," said Erickson Pereira. "While specific dyno figures can vary based on the overall setup and tuning, users have reported significant improvements in engine responsiveness and efficiency. The system is designed to work optimally within a basic operating range from idle to 7,000 rpm."

The system comes with an innovative linkage set that includes integrated throttle stops, idle controls, lever arms, and joiner/balancer. There's just a single-screw adjustment for calibration between the front and rear throttle shafts. The throttle bodies are CNC machined from 601 cast aluminum and support precision-machined butterflies.

"The system supports high horsepower, making it ideal for racers looking to maximize engine output," added Pereira. "It's compatible with 50 lb/hr injectors for 700–750 horsepower and 80 lb/hr for over 1,100 horsepower naturally aspirated, and it caters to a wide range of racing needs."

In addition to its performance qualities, the system is also visually appealing with a classic design that bridges contemporary engineering and traditional car culture.

UC-10 COLOR DASH DISPLAY

HALTECH

haltech.com

Following the success of its first color dash display, the 7-inch iC-7 model, Haltech in Wetherill Park, New South Wales, Australia, has released a 10-inch version named the uC-10. It's designed to work alone or with the vehicle's ECU, and it can be tied in with a tablet or laptop for data or tuning purposes.

"Both the 7- and 10-inch displays can be used standalone, and you can actually utilize many of our other CAN devices, so you'll be able to data log things like your wide-bands utilizing just our dash," explained Andrew DiMartino. "If you want to pair with the ECU, it just opens everything up a little bit further."

The 10-inch display offers plenty of viewing area to monitor critical data in real time. The full-color TFT screen is optically bonded to ensure clear visibility, even in bright sunlight. The sleek aluminum enclosure is designed to enhance the appearance of any interior.

The uC-10 is compatible with Haltech CAN, OBD2, and select

aftermarket ECU brands. It offers plenty of scope for sensors and other inputs in standalone or for use as an I/O expander in a Haltech environment. The uC-10 has the same mounting points as the iC-7, so an upgrade is quite easy, and it fits a variety of dash profiles.

NEWLY APPOINTED

LESLIE HORNE

The Southeast Gassers Association champion who bought this fun, throwback drag racing series plans for growth that preserves its old-school appeal.

By Jim Koscs

The news this past December that Leslie Horne purchased the Southeast Gassers Association (SEGA) racing series from its founder, Quain Stott, would likely not have come as a major surprise to anyone who knows Horne and his background. He had already built successful businesses before becoming a tough competitor on the SEGA circuit in 2018.

> *"WE'VE GOT A GOOD FOLLOWING, BUT I THINK THERE'S ROOM FOR IT TO GO TO ANOTHER LEVEL."*

That Horne would end up behind the wheel of a race car might have been pre-destined from childhood. At just nine years old in rural Green Creek, North Carolina, he learned to drive in a 1963 Falcon convertible with a "three on the tree" column-shift manual transmission. From working in a cotton mill after high school, Horne went to school for auto body and then worked in a body shop for a couple of years. He also opened a detailing business and had a buy-here/pay-here used car lot.

In the 1990s, Horne road-raced motorcycles and opened a motorcycle service shop that he sold in 2007. After he began buying houses to fix up and sell, Horne earned his real estate license in 2008 and built up Leslie Horne and Associates Realty agency in Boiling Springs, South Carolina. It currently employs 13 agents.

Horne had known Stott from growing up in the same part of North Carolina. "He and my father were buddies," Horne told PRI in a recent interview. "He's 11 years older than I am. I always looked up to him." Watching Stott race in 2017 inspired Horne to enter SEGA competition. He started with a 1962 Chevy II wagon called "Stud Muffin," winning the C/Gas championship in 2019. After selling that car, he built his 1955 Chevy, "Chick Magnet," and won the 2022 A/Gas championship.

SEGA's 13th season started on March 23 at Brainerd Motorsports Park in Ringgold, Georgia, with nine races to follow that.

PRI: Was buying SEGA a huge leap for you, or did it just seem like a natural progression from what you had already been doing in racing and business?

Horne: It did seem natural. Quain had been talking to me about it on and off for a couple of years. I made an offer, and here we are today. It felt like the right time. In 2022, I was invited to the PRI Show, and that helped get me on fire about doing this. Then in 2023, [SEGA Race Director] Randy Edmonds was with me for the Show. The people that I met there were so positive about me purchasing SEGA.

PRI: Should SEGA racers expect to see any significant changes for 2024?

Horne: I don't expect significant changes. I'm keeping all the employees. Quain already had Randy and Operations Director Rocky Platt running the show, and that will continue. My goal is to make things run more smoothly. I'm going to stay as true to the roots as we can. I want to carry on Quain's legacy. But you don't want things to always be the same, because then you don't evolve.

PRI: Where do you see room for growth in the series?

Horne: We've got a good following, but I think there's room for it to go to another level.

I think that we have about outgrown some of the smaller tracks. People want to go somewhere for a really good experience. They don't

LESLIE HORNE

TITLE:
Owner

ORGANIZATION:
Southeast Gassers Association (SEGA)

HOMETOWN:
Chesnee, South Carolina

FAST FACT:
"I mess around with a lot of old cars—Chevelles, Novas, Camaros, Corvettes, 1955 Chevys, and 1950s trucks. I've had 32 cars at one time. When I started SEGA racing in 2018, a lot of those went to the side. I'm down to 20-something. The 1967 Camaro is my favorite, because that was the first car my dad bought for me when I was 14. I've probably had more than 150 of them over the years."

want to stand in long lines to get a sandwich or use the restroom. We've got to be looking at these things.

PRI: People are attracted to SEGA racing for its "old school" racing experience and atmosphere. How do you preserve that while growing?

Horne: With the buzz and excitement around the new ownership, I just feel like it is going to go to another level. Things will evolve, and I've got some different ideas, but I also do not want to take away from the "old school" factor. I want it to be a good, fun experience for the whole family, from little kids to grandparents. Also, we're working on some TV coverage, possibly streaming or something else.

PRI: How do you balance your work at SEGA with your real estate business?

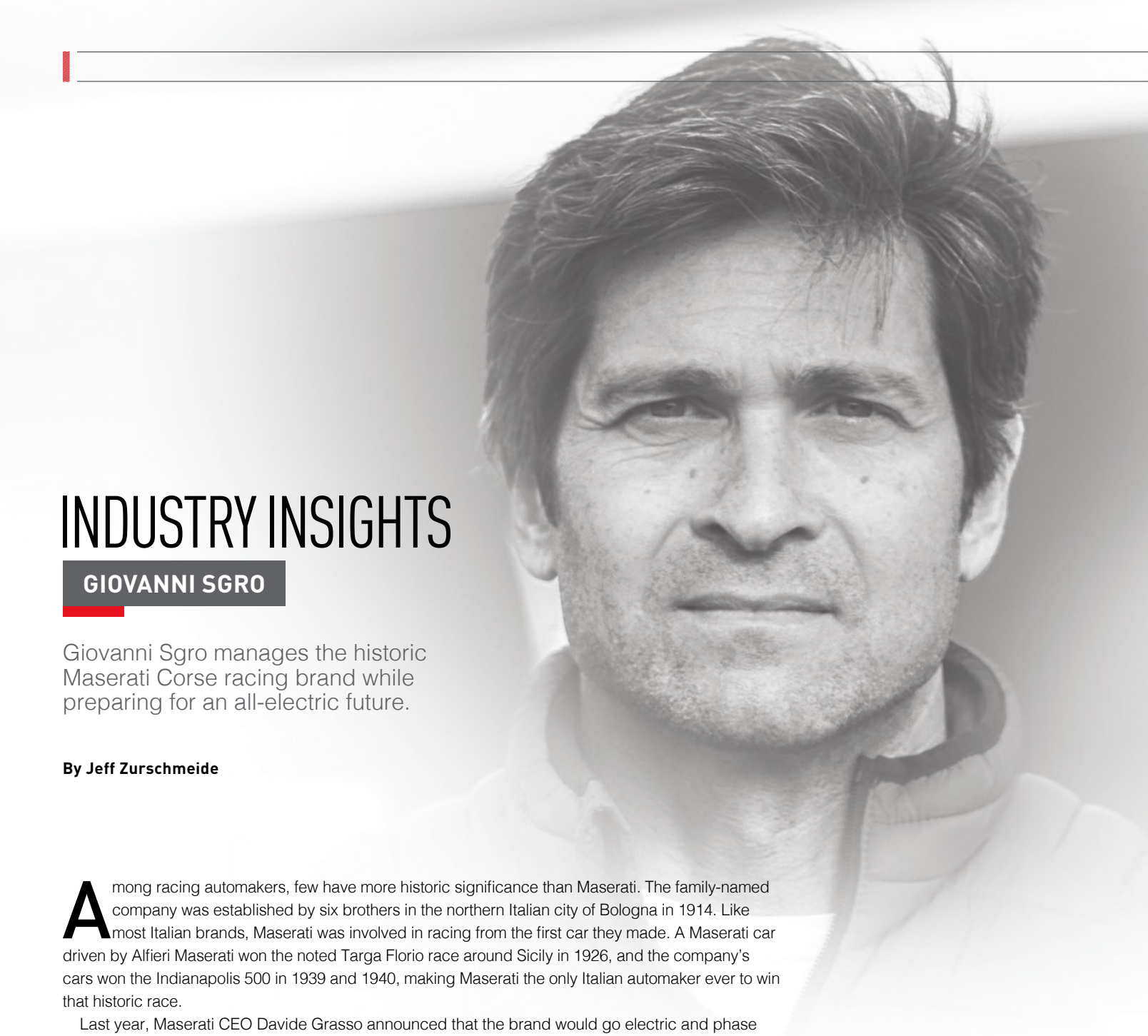
Horne: I have good people in place at my office. That's enabled me to do the racing full time for the past five years. When you run a gasser for the championship, it's pretty much a full-time job.

PRI: Is there any advice you received personally or professionally that you feel guides you?

Horne: Nine times out of 10, people just want others to listen to them.

PRI: Except for your cell phone or other technology, is there anything you would say you can't live without?

Horne: My wife, Donna, and two kids, son Logan and daughter Lexi. That's what makes me get up in the morning and do what I do. My wife is always there and supportive of me, no matter how wild or crazy it is. PRI



INDUSTRY INSIGHTS

GIOVANNI SGRO

Giovanni Sgro manages the historic Maserati Corse racing brand while preparing for an all-electric future.

By Jeff Zurschmeide

Among racing automakers, few have more historic significance than Maserati. The family-named company was established by six brothers in the northern Italian city of Bologna in 1914. Like most Italian brands, Maserati was involved in racing from the first car they made. A Maserati car driven by Alfieri Maserati won the noted Targa Florio race around Sicily in 1926, and the company's cars won the Indianapolis 500 in 1939 and 1940, making Maserati the only Italian automaker ever to win that historic race.

Last year, Maserati CEO Davide Grasso announced that the brand would go electric and phase out gasoline-fueled engines by 2030. After an accomplished history spanning 110 years of gasoline-fueled performance cars, that's a tall order. Maserati is leaning into that transition both in street cars and on track. All electrified Maseratis use the name Folgore (FOLE-Gore-Ay), which means "lightning" in Italian.

"WE'VE BEEN IN LOTS OF DIFFERENT RACING PROGRAMS FROM FORMULA 1 TO INDYCAR TO GT RACING IN OUR HISTORY, AND NOW WE'RE THE FIRST ITALIAN LUXURY AUTOMOBILE BRAND TO BE IN FORMULA E."

The man chosen to head up the racing program in this transitional period is Giovanni Sgro, an Italian-American who was born in Rome, Italy. Before coming to Maserati, Sgro earned a degree in communication sciences from the University of Rhode Island, with additional studies in Spanish and business administration. He put his talents to use first in the alcoholic beverage industry, working at Diageo, the corporation behind brands like Johnnie Walker, Crown Royal, Smirnoff, Captain Morgan, and more. At Diageo, Sgro served as group brand director with responsibilities for brand relationships in motorsports. In that role, Sgro managed sponsorships in NASCAR, Grand Am, and IMSA.

Coming to Maserati, Sgro is responsible not only for the transition to electric power in motorsports, but also to maintain the Maserati-branded presence in GT racing. Sgro led Maserati to become the first Italian automaker to compete in the electrified FIA Formula E series. We caught up with Sgro just before the 2024 Formula E season kicked off in Mexico and IMSA's Rolex 24 Hours of Daytona signaled the start of traditional GT sports car racing for the year.

PRI: Tell us about yourself. How did you get to the top of Maserati's racing program?
Sgro: I have a diverse background. I think that I've always been a strategy and brand marketing person through my entire career. I started at CNN and ended up also working for a company called Diageo, which is a large alcohol beverage company. That was my first step into motorsports because with that business I was involved in NASCAR, Grand Am, and the Rolex 24 Hour race, as well as Formula 1.

I'm half American, half Italian, so I lived in the US and worked in the US. With NASCAR I sponsored Roush Racing with Crown Royal whisky. Then with Formula 1, we had Johnnie Walker. I've always been involved in sports, but I always loved motorsports. Maserati has been at the forefront of motorsports, not just automotive in general. It's a luxury automobile brand that was born on track. So when this opportunity came about, obviously being half Italian, I had to go back into my roots, and certainly there's a high level of pride when you work for a brand like Maserati.
PRI: Formula E represents a shift to electric power at the highest levels of FIA racing.

"OUR BUSINESS OBJECTIVES TIED IN VERY WELL WITH THE FORMULA E PROGRAM."

What made Maserati look at Formula E and decide that this is a place where the company wants to be?
Sgro: I think it's a natural choice for us based on the strategic business objective that we declared, which is to be fully electric by 2030. If you look at our background, which is racing, that's one check. Then you look at authenticity and credibility, that's another check. We've been in lots of different racing programs from Formula 1 to IndyCar to GT racing in our history, and now we're the first Italian luxury automobile brand to be in Formula E. It's just another milestone for us.

The fact is our business objectives tied in very well with the Formula E program. It's the highest performing electric racing car in the world. Formula E also has a very diverse audience. It's not just motorsports fans, it's also individuals who are really interested in technology innovation. Formula E fans want to understand what they're going to be driving in the future. Really, those two things interest us very much. Another reason is that our racing programs also allow us to showcase the full range of our automobiles, specifically the GT cars, as we've done this past year. That's an immediate connection.

The technology transfer from Formula E isn't immediate or 100% obviously, but it does give us a lot of insight in what we can do with our street cars. It's about developing software technology and the electric powertrain. I think one thing that is also very important in Formula E is that we can tap into our existing group of race car drivers. It's an additional edge that we have.

Also, in Formula E the technological aspect is immediate. You can auto-correct immediately because it's software, not hardware. That means you can imagine and understand how you can better use the consumption of energy from the battery. Then the drivers give us insight into how the car is performing and what things we can do. It's interesting to get them into our simulators and into our street cars and get their input on those as well. All in all, the first year in Formula E was extremely exciting, and we're very proud to be part of it, and we're looking forward to our second season kicking off in Mexico.
PRI: Electric racing can be hard to sell in America. Do you see plenty of internal combustion motorsports going on in the future, or is 2030 a hard cutoff date?
Sgro: I think our focus is set. We made that commitment and we're sticking to that 2030 objective. We sell Italian luxury, and that is independent of the motor that is driving your Maserati. It is Italian craftsmanship, audacity, and luxury that is in that Maserati, and that's consistent across any kind of motor that you have. I think that the objectives that we have from a business standpoint are firm, and I think any product that Maserati produces becomes a global icon, in our opinion. I think consumers will be happy with us, whether it's a combustion engine car until 2030, or an electric car after that.

Racing in Formula E is "a natural choice" for Maserati, said Giovanni Sgro, based on the company's objective to be fully electric by 2030. "I think that Formula E has really been one of the greatest opportunities to build awareness of our past but also to look toward the future," he said. "Our future is electric, and that's why Formula E has been a great platform, a learning platform, and it's exciting to be a part of it."

PRI: With the Formula E series, you mentioned that the technology transfer isn't immediate, but it is happening, and as you mentioned, you can get the input from your drivers on the Folgore line of Maserati electric street vehicles as well. Is there any other major benefit that you're seeing from your participation in electric racing?

Sgro: I go back to this: Technology transfer isn't immediate, but there's an analysis, an evaluation that happens. It's not like everything that we're doing in the race car is applied to the street car, but it is immediate in the sense that we have immediate data. When you finish a race, you go from one race to the other, you have immediate data after the race when you're sitting with the engineers and the drivers. You have an immediate output of what happened, what we could improve, how could we really capture some of this data and apply it. It's whether we use it immediately. It's more of analyzing how we really decipher what we're pulling out of the car.

One of the benefits is the overall awareness of Maserati that we are gaining. It's not only about new consumers or potential customers, but also the existing customers who have known Maserati in the past. They have a chance to see what our future is all about. Then [there are] the new consumers, the ones who are perhaps the younger generation who probably know what Maserati is, but some probably didn't know that we're celebrating 110 years of history this year, or that we were born on track, and we won so many championships.

We've had ups and downs, but I think that's what really builds a strong foundation. It's about really understanding where your strengths are and really building on those. And it's about the challenges that we've faced and overcome. I think that Formula E has really been one of the greatest opportunities to build awareness of our past

"IN FORMULA E THE TECHNOLOGICAL ASPECT IS IMMEDIATE. YOU CAN AUTO-CORRECT IMMEDIATELY BECAUSE IT'S SOFTWARE, NOT HARDWARE."

but also to look toward the future. Our future is electric, and that's why Formula E has been a great platform, a learning platform, and it's exciting to be a part of it.

PRI: Let's talk about that electric future. Formula E is a spec series where you're all on the same chassis. You have a little bit of latitude to develop your own driveline and certainly your own setup and energy management system. Are we going to see Maserati electric GT cars competing in new electric series in the future? Is there anything you are working on that you could tell us about?

Sgro: For electric racing, I'm focused on Formula E right now. In GT racing we started off when we announced the MC20 a few years back, and Davide Grasso, who's my CEO, he made the commitment to go back to racing as a company. That commitment had three aspects to it: One was Formula E because obviously that's the natural choice for electric. Then going back to GT racing with the MC20 GT2 race car in the FIA GT2 class. The MC12 has been an iconic racing machine in FIA GT1 with Andrea Bertolini at the helm. And then the MCXtrema, this limited edition 62-unit beast of a car that we unveiled, or really unleashed, at Pebble Beach in California this past August. Those are the three focused platforms that are helping us reset ourselves into racing, but they also highlight the equity of the brand because what we do on track is what inspires us to do things off track.

To answer your question the long way, is there a future for GT on track? I think there is, absolutely. I think it's about making sure that we make the right decisions, that we don't dilute the opportunities that we have, but really focus on what those potential other racing platforms that are all-electric could offer us. We look at everything just because we want to be aware of what our competition is doing, and we want to be aware of what our future offers. So yeah, the long answer is I think we look at everything.

PRI: Are the benefits from Formula E quantifiable in terms of sales or followers for Maserati?

Sgro: Absolutely. We've had our social media channel at a tremendous growth rate since we launched our Formula E team, and that's one indication that what we're doing is working. We're communicating to an audience that is interested in what we're doing in racing, which is very positive. It's quantifiable in many different ways. I'll give you an example: In Rome we had the electric Maserati Gran Turismo Folgore on track doing hot laps, and you should see the images of the potential customers. We had stakeholders as well as journalists who were inside the car, and the acceleration when they took off, both their hands were one way and the other! You couldn't see all their faces because they have the helmet on, but their eyes were all the same—they were popping out of their heads!

The acceleration and the performance of that car is incredible. To answer your question this way, when you sit in that car, you create an immediate connection to what Folgore means, and a great opportunity for conversion that is quantifiable. There's also a return on investment in terms of media awareness, TV broadcasting, and the fact that Maserati is in single-seater racing. We were the only Italian luxury brand to do that,

Giovanni Sgro (center) with Maserati's Formula E drivers Max Günther (left) and Jehan Daruvala. "I'm very happy that the two drivers are wearing Maserati on their chest," said Sgro, who predicted that in 2024 "we will fight until the last race and hope to bring home more points than we did last year."

In 2023, Maserati returned to GT racing with an MC20-based car in FIA's GT2 class, where it claimed pole position and a second-place finish in its first outing. Giovanni Sgro noted, though, that Maserati's commitment to full electrification by 2030 could mean the end of the company's internal combustion race cars.

and it gave us some great visibility as well as several different narratives: Maserati back to racing, Maserati full electric, Maserati's outlook for the future. We had narratives about Fangio, about Maria Teresa de Filippis as the first woman in Formula 1 back in 1958, and Andrea Bertolini in GT racing, so it gave us a great opportunity to really tell different stories. We set the foundation in 2023 and really look forward to 2024 to do the same. So overall, we're pleased with the outcome of our first year back to racing.

PRI: Looking to the future, what have you got in store?

Sgro: I am hoping to build on our momentum in Formula E. If you like any kind of sports, you love a comeback story. We had a little bit of that in 2023. We had a challenging first half of the season with a new car, new tires, new drivers. There's a lot of things that you have to digest and learn. From January to April was challenging, and then Berlin came along, and we got to the podium with Max Günther. It was an amazing experience. I never thought I could be so emotional about getting to the podium. Then we had the third-place podium at home in Rome with Max, and he had third place and two pole positions in Jakarta.

I'm hoping to build on that momentum. We have a young new driver, Jehan Daruvala. He's talented, he's motivated, he's committed to the team and the objectives. So I'm very excited. I think Max will be a great role model even though they're both extremely young, all in their 20s. I could be their grandfather in terms of age, but I'm looking forward to Max being a great role model to Jehan. They can work off each other really well. I never want

Maserati's participation in Formula E and GT racing, and the introduction of the limited-edition MCXtrema hypercar, "underline the commitment of the brand and the sense of responsibility that we have," Giovanni Sgro said. "It's a real honor for all of us to be part of this brand."

ROBINS
SINCE 1983
Signature brand

-0+ Exactly

WELCOME
TO THE NEW SEAT & GUIDE ERA

EZmatic
Cut by Wire

Manual-Automatic-Manual Cycles switch from manual to automatic to manual cycles with touch of a button.

RUBi SG 6.1 HP Auto
Next Generation

AUTOMATIC
Seat & Guide Machine

As easy as 1-2-3
1. LOWER PILOT INTO VALVE GUIDE
2. TOUCH AUTO CYCLE
3. MACHINE COMPLETES SEAT CUTTING AUTOMATICALLY

Machines displayed may include optional accessories

ROBINS SINCE 1983 -0+ Exactly

40 Years of Excellence 1983 2023

/robinsmachines | rc@RobinsMachines.com | www.RobinsMachines.com

youtube.robinsmachines.com

Eastern U.S.A
MEC CNC
Anthony Usher (949) 800-7176
anthony@meccnc.com | www.meccnc.com

Western U.S.A
Hopper HOPPER EQUIPMENT
Jeff Murchison (909) 226-9922
Jeff@HopperShop.com | www.HopperShop.com

EVERY CUSTOMER SINCE 1983 HAS BEEN "ROBINS-TESTIMONIAL"

to make a prediction of victories, but I'm very confident that we have a great structure, and I'm very happy that the two drivers are wearing Maserati on their chest. So our prediction is, we will fight until the last race and hope to bring home more points than we did last year.

> *"WHAT WE DO ON TRACK IS WHAT INSPIRES US TO DO THINGS OFF TRACK."*

PRI: Is there anything we haven't talked about that you would like to put on the record?

Sgro: I think we covered this, but this is one of those points that's really close to me. We kicked off in 2023, and it's nice to see the richness of what Maserati Corse meant in this last year. We were in Formula E with some successes and some learnings. I'm very proud of the team and the drivers who got us to that point. In GT2, we made a commitment to go back to GT racing, and we made the commitment to Paul Ricard at the last race of the season. We committed to the engineering team, and to Andrea Bertolini as our chief race car driver and tester who did the shakedowns getting that car to perform really well. Then at the first race in GT2 with Paul Ricard, we earned pole position, and we finished second.

I don't want to sound like we are showing off, but it's nice to recognize team effort and Maserati's resilience in making sure that we always push the boundaries and race beyond. That is our positioning with Maserati Corse. And I think with Formula E, and with GT2 getting on track, and the MCXtrema, it all really underlines the commitment of the brand and the sense of responsibility that we have. So any time a journalist asks me what I hold dear, it is the fact that we came out, we made promises, and we maintained them as best as we could. It's a real honor for all of us to be part of this brand. PRI

WWW.WILWOODRACING.COM

PRI FOUNDING MEMBER

RACING wilwood

ENGINEERING INNOVATIVE BRAKING SYSTEMS SINCE 1977

For 46 years, Wilwood Engineering has been a leader in high-performance brake systems and an OEM solutions provider to many industries. All operations, from R&D and manufacturing to distribution and support, are located in the Camarillo, CA headquarters.

Original Dynalite Caliper 1977-1982

| BRAKE KITS | CALIPERS | ROTORS | MASTER CYLINDERS | PEDALS | PRESSURE VALVES | HATS | BRAKE FLUID |
| BRAKE PADS | HUBS | PROSPINDLES | BRAKE LINES | FLEXLINES | PARKING BRAKES | HARDWARE |

LEARN MORE

wilwood.com
805.388.1188

DESIGNED · TESTED ★★★ USA ★★★ MANUFACTURED

RACING wilwood

POWER. CONTROL. PRECISION.

The hand controls in Robert Wickens' championship-winning Bryan Herta Autosport Hyundai Elantra N TCR combine established technology with custom engineering. BHA altered a readily available Guido Simplex control system to give Wickens "as much feeling and control as possible," he said. Photo courtesy of Bryan Herta Autosport.

SPECIAL REPORT:

ADAPTIVE RACE CARS

Adaptive race car equipment allows drivers with disabilities to overcome challenges and compete on track while winning championships and setting records in the process.

By Steve Statham

When human spirit and willpower are able to harness technology and industry, amazing things can happen. This has been illustrated in motorsports since the beginning, but there are some corners of the racing universe where that marriage of determination and tech is even more pronounced, if less visible. The niche of adaptive race car technology has increasingly allowed individuals with physical handicaps to compete on track. It is one area where victories don't always come with a checkered flag, but the wins feel just as big.

Adaptive race cars have opened the doors for paraplegic and quadriplegic drivers, those born without limbs, amputees, and others to pilot cars in competition. Even blindness isn't necessarily a barrier in select racing venues. Disabilities don't extinguish the competitive spirit in drivers, nor the competitive spirit in the motorsports aftermarket, where finding solutions to difficult problems is just another day at the office.

Adaptive race car technology is a subject that has been in the headlines recently, most notably with Bryan Herta Autosport (BHA) drivers Robert Wickens and Harry Gottsacker winning the 2023 IMSA Michelin Pilot Challenge TCR division championship. Wickens is a veteran driver who has reached the top levels of the sport, including being named the 2018 Indianapolis 500 Rookie of the Year and the IndyCar Series Rookie of the Year. A terrible crash later that season at Pocono left him with paraplegia and other injuries.

But his determination to race again was undimmed, and his IMSA championship was earned in his second season in the series piloting the BHA Hyundai Elantra N TCR with hand controls. We asked Wickens how much testing he had to do before he achieved proficiency with the hand controls, and his answer, surprisingly, was not much.

"During my years of recovery, I always envisioned months of testing so I could hit the ground running when I returned to racing," he said. "However, that just wasn't reality. I got my first taste back into the car in May of 2021 at Mid-Ohio at a BHA track day. After that, my next time in the car was the Daytona Roar in 2022 just one week ahead of my first race back in Daytona, where we finished third."

"WE'VE JUST GONE WAY ABOVE AND BEYOND TO MAKE SURE THAT ME AND MY CO-PILOT ARE SAFE."

Far away from cheering IMSA grandstands, other drivers are overcoming different challenges thanks to adaptive race car technologies. Dan Parker is an accomplished drag racer, with the 2005 ADRL Pro Nitrous world championship on his resume. A horrific crash during testing in 2012 left him blind. It was not easy for Parker to regroup, but inspiration struck in the form of a dream to race at the Bonneville Salt Flats.

Adaptive race cars have provided opportunities for disabled people to either enter or continue their careers in motorsports. In fact, 2005 ADRL Pro Nitrous champion Dan Parker, who became blind after a 2012 testing crash, now competes behind the wheel of a 2008 Corvette using a guidance system. In 2022 he set the Guinness World Record for fastest blind driver, at the Spaceport America runway in Truth or Consequences, New Mexico, averaging 211.043 mph.

"I reached out to my good friend Patrick Johnson at Boeing and asked him about a guidance system," Parker recalled. "He said, 'That's easy. If that's all you're worried about, start building your bike.'"

Other land speed racers with vision loss had used a follow car or motorcycle with two-way communications to navigate. The guidance system Johnson created allowed Parker to ride unassisted. He took his three-wheeled bike to Bonneville in 2013 and became the first blind man to race at the historic land-speed lakebed. "I returned in 2014 and set my FIM class record with no exemptions for blindness because I don't need any human assistance," Parker said. "Once they tell me the course is clear, nobody helps me do anything until I bring the motorcycle to a stop."

He has since stepped up to even more ambitious land speed racing goals, behind the wheel of a 2008 Corvette. In 2022 he set the Guinness World Record for fastest blind driver, at the Spaceport America runway in Truth or Consequences, New Mexico, averaging 211.043 mph. (Officially, "Fastest Speed for a Car Driven Blindfolded," as Guinness did not have a blind driving category.)

When not stretching performance boundaries for the blind, Parker is a machinist. He runs his mill machine and lathe every day making custom hand-machined writing pens that he sells online as part of his The Blind Machinist business. But even here, the racing technology he employs plays a role. Patrick Johnson, the same engineer who made his racing guidance system, created a digital readout so that his mill machine could talk to him.

HIGH TECH AND LOW TECH

Parker's record-setting Corvette illustrates how far technology has empowered racers with disabilities, with potential applications that extend far beyond the race track.

"In 2017 I started building a Corvette. The system in the Corvette is way more

ARP®
automotive Racing products

TESTED & PROVEN

Around. Above. Below.

ARP fasteners are used in racing all around the globe and applications from space to below the earth's surface.

ARP Fasteners are tested and proven in the most demanding environments on Earth...and beyond.

Made In USA

All ARP fasteners are manufactured entirely in our own facilities in Southern California and raced all over the world.

5,000 catalog items and specials by request

Special Orders +1.805.525.1497 • Outside the U.S.A. +1.805.339.2200

1.800.826.3045 • arp-bolts.com

Adaptive Driving Experience uses a NASCAR Toyota Camry to give disabled people a real-life experience of driving a race car. To make sure the guest driver doesn't have any problems, there's a second set of controls on the right side of the car and a veteran driver in the passenger's seat.

sophisticated," Parker said. "The guidance system box is mounted between the two rear wheels inside the car. We plot the centerline of the track at both ends, as far as we can go. That creates a theoretical centerline. If I go one foot right or left off that center, I get a tone in that ear. The farther off-center I go, the tone increases. If the tone is steady, I know I'm going straight and parallel, I just might be a little right or left and I'll ease in. Then, 400 feet before the finish line, it tells me 'parachute,' and I deploy my parachute. Then, 'stop,' which tells me I crossed the finish line. Then I bring the car to a stop.

"It's using GPS signals that, once I start, the main thing that does most of the calculations is a gyro that can detect one-tenth of one degree of yaw, and it is updating over 100 times a second. Patrick wrote all the software, 100% volunteer."

The guidance system is the centerpiece of Parker's land-speed efforts, but his own racing experiences colored every aspect of the car build. "I was a chassis builder before I went blind, and I designed the car myself. Obviously, I had help building it," he said, "but I designed pretty much every aspect of the car myself. So we went way above the minimums. I try to stress to people, 'The rules are just a minimum. You can do more.' My car has a lot more cage in it than is required. I have containment seats on both sides, window nets on both sides. Ten pounds minimum fire suppression is what the rule is; I have 20 pounds. We've just gone way above and beyond to make sure that me and my co-pilot are safe if anything turns to crap."

Robert Wickens' racing controls combine established technology with custom engineering. "The foundation of the system is produced by Guido Simplex and is available to anyone for purchase," Wickens said. "However, Bryan Herta Autosport has made many alterations to give me as much feeling and sensation as possible. The system includes a pneumatic actuator to help generate brake pressure. The actuator pushes the able-bodied brake pedal that my teammate uses. The majority of the work has been trying to create a linear brake feeling from the actuator, because that is the feedback I get from my brake ring when I apply the brakes.

"The only other part of the car that was changed was relocating the clutch to a hand-controlled lever, which is used as a hand brake for the abled-bodied drivers. So Harry and I have to use a hand-controlled clutch to get the car moving and stopping."

The Adaptive Driving Experience (ADE) in Fairfield, New Jersey, is getting ready to relaunch its program with a series of driving events in 2024. Its target market is largely disabled veterans' groups and other organizations that represent the handicapped looking for the experience of driving a race car. The organization's car was on display at the 2023 PRI Show and reflects a combination of custom design and proven parts technology.

"The car itself is a NASCAR Gen 6 Toyota Camry Cup car, so it has some history already, with NASCAR and drivers like Elliott Sadler and Brian Keselowski. We got the car from Brian," said Danny Chrissanthis, director of ADE. "The body that is on there is a show car body, it's not actually a racing body. We put a door in it, so it's a removable door section. And it has a swivel seat base made by a company called Drive-Master. They're on our Board. They build vehicles for people with disabilities, so this is their specialty. They put the swivel seat base in there and then the hand controls, and they also put in another steering wheel and gas and brake on the right side of the car. It has two full sets of controls. The goal is a race car driver sits on the right side of the car.

As a teenager, Eric Saunders was a successful motocross racer until a crash left him paralyzed from the chest down. Undaunted, he turned to four-wheel racing and now competes in winged sprint cars with his brother Garrett.

UPGRADE, ACCELERATE, DOMINATE

DODGE/RAM CUMMINS

SECURE YOUR TRUE POTENTIAL PERFORMANCE

2007-2023 RAM PICKUP 2500 W/ 68RFE TRANSMISSION HEAVY-DUTY CAST ALUMINUM TRANSMISSION PAN

2013-2023 RAM 2500/3500 6.7L W/ AS69RC TRANSMISSION HEAVY-DUTY CAST ALUMINUM TRANSMISSION PAN

Upgrade your Ram transmission with PPE's flat-bottom transmission pans, cast from high-strength A356.0-T6 aluminum. The internal baffles and external cooling fins reduce fluid temperatures, improving lubrication while holding extra fluid. PPE's Heavy-Duty Transmission Pans, optimize heat dissipation, reduce fluid temperatures, and include a Neodymium magnet-equipped 304 stainless drain plug, NPT ports for fluid temperature monitoring, plus a composite gasket with aramid fiber reinforcements adding protection against contaminants, ultimately increasing transmission service life and minimizing costs.

Applications:
2007-2023 Ram Pickup 2500 w/ 68RFE Transmission

P/N's
Raw (228052100)
Brushed (228052110)
Black (228052120)

Applications:
2013-2023 RAM 2500/3500 6.7L w/ AS69RC Transmission

P/N's
Raw (228053200)
Brushed (228053210)
Black (228053220)

Innovations

2013-2023 RAM 2500/3500 5.7L/6.4L/6.7L TRANSMISSION FLUID THERMAL BYPASS VALVE RAM

Upgrade your Dodge/Ram Cummins diesel with PPE's Transmission Fluid Thermal Bypass Valve. Boost cooling capacity by eliminating restrictive OEM passages, preventing overheating during towing or stop-and-go driving. The billet aluminum valve ensures optimal fluid flow to the cooler, with added protection from a Neodymium magnet-equipped service plug, trapping debris for easy removal.

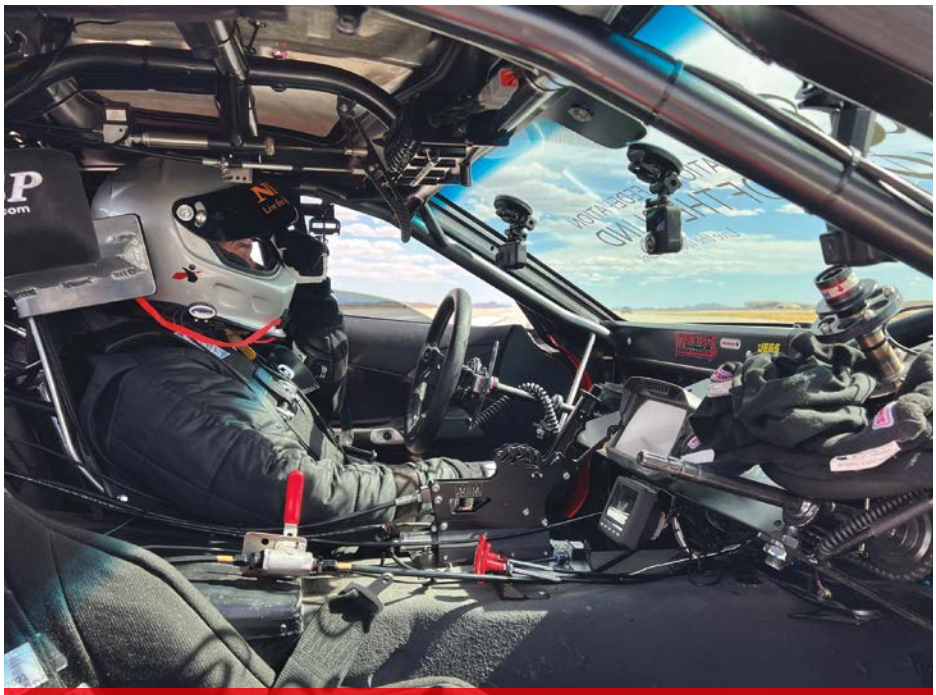
Applications:
2013-2023 RAM 2500/3500 5.7L, 6.4L, 6.7L
Billet Aluminum 2013-2018
P/N (225065000)

Billet Aluminum 2019-2022
P/N (225065100)

SCAN TO LEARN MORE!

PPE
PACIFIC PERFORMANCE ENGINEERING

*PPE*power.com | 725.238.2002



Dan Parker, who is blind, has set speed records in his Corvette using a guidance system developed by a friend of his who works at Boeing. The system uses GPS signals and a gyroscope that "can detect one-tenth of one degree of yaw, and it is updating over 100 times a second," Parker said.

He's maintaining control of the vehicle at all times, so the guest driver, who has likely never driven a race car before, doesn't have a problem."

The ADE car is proof that it doesn't require cutting-edge technology for physically challenged people to experience the thrill of driving a race car. "The push-pull gas/brake that we use is off-the-shelf. That was actually invented and developed decades ago by Drive-Master out of New Jersey. It's a very basic setup," Chrissanthis said. "We went with it because it's inexpensive and also because it's kind of popular because it is inexpensive, and there would probably be more people who are familiar with it."

Another racer who has taken the low-tech road to success is Eric Saunders, from Lakeville, Indiana. A successful motocross racer as a teenager, Saunders crashed at a test track in 2010 and was paralyzed from his chest down the day before his 18th birthday. But an unquenchable racing spirit and help from family, friends, and sponsors put him back on track, initially in mini sprints. He currently competes in winged sprint cars with his brother Garrett as part of Saunders Racing.

Eric's father Irish Saunders said he's a big believer in the KISS principle—keep it simple, stupid. The hand controls on Eric's race car bear that out. Plus, cost is always a factor for race teams. "It's pretty simple. The throttle is cable-driven to the injection. The brake is hooked right into the regular brake with a Brembo hand master cylinder, is all it is," he said. "We've been talking about the fly-by-wire deal, electronics for the throttle. But good God, it's $7,000 for one of those things."

Other more subtle modifications help Eric maximize his talents behind the wheel. "Randy Sweet made a steering rack that was super fast, so that if you had your hands at 10 and 2 and you went to 12 and 4, you'd have full lock on the wheel," Irish said.

If his own race car relies on less-than-exotic technology, Eric is looking forward to the day when four-wheeled racing stretches the boundaries more. "There's so much technology out there, but they're only using a portion of it. They've not even touched the surface of where the technology actually is," he said.

RISING ABOVE

For racers struggling to overcome the devastating reality of crippling injuries, being able to compete in a race car again means almost more than they can express. "It's huge. When I went blind, and coming home and facing reality, I never imagined I would be behind the wheel of a race car again," Parker said. "I was on the verge of suicide, and one night it just came to me in a dream, at 2 o'clock in the morning, the most vivid dream that I would build a motorcycle and race at Bonneville. I never went back to sleep that night. When my fiancée woke up, I told her, 'I know what I want to do.' And I told her about my dream. She said, 'Okay,' and that dream saved my life."

Robert Wickens' IMSA championship has lit a renewed fire inside him, and he's already planning his next moves. "Winning the championship was an incredible feeling. It only further vindicated that I belong in motorsports even as a paraplegic. The faith that BHA, Hyundai, and my teammates put in me only proves that my hard work in recovery and setting my goals high were worth it.

"I am hoping this is only the beginning in my new journey in motorsport," Wickens added. "We are working on a new state-of-the-art hand-control system that will provide me a much higher ceiling and can take the next steps in motorsport. The goal is to race in the IMSA WeatherTech series, and with the technology we are working with, it should give me an equal chance to any other driver out there."

For Eric Saunders, the switch to sprint cars from motocross turned into a case of one door closing and another opening. "The reason why I liked this was because I never did this before," he said. "I didn't have any expectations. I knew where I was at when I was racing motocross, and I would never be at that level ever again.

"There's a thing that [sprint car driver] Randy Hannagan told me, because his brother was paralyzed, too. He said,

LOVE RACING?

JOIN THE CLUB!

PRI MEMBERSHIP

IT'S TIME TO BECOME A MEMBER!

WITH MULTIPLE MEMBERSHIP OPTIONS, WE HAVE THE PERFECT ONE FOR YOU!

SCAN QR CODE FOR MORE INFORMATION

'Eric, you have to think about this. Out of everybody out there, you have more of an advantage than you think you do. You can pick a needle up with your fingers, but you can't pick a needle up with your feet. So think of having all the throttle control right through your hands.'"

Watching a handicapped individual return to racing means almost as much to family members and friends as it does to the racer. Eric's circumstances rallied supporters from the motorsports industry to his side, including Tracy Trotter, Ed Kennedy, Mike Fedorcak, Randy Sweet, Tony Stewart, and many others. That sense of philanthropy is embedded in Saunders Racing. "Tony Stewart's foundation was a huge, huge help with redoing our house and getting it handicap accessible," Irish said. "Tony's foundation is for animals, children, and injured racers. Those foundations are huge. That's what we promote our whole deal through." Saunders Racing recently

"The rules are just a minimum. You can do more," Dan Parker said about the safety systems in his Corvette. To keep him and his co-pilot safe, there's "a lot more cage" in the car, plus containment seats and window nets on both sides and a fire suppression system with double the required capacity.

announced partnerships for 2024 with the Dale Jr. Foundation, Ryan Preece, the Kevin Harvick Foundation, and the Tony Stewart Foundation.

For Irish, watching his son win his first race in four-wheel competition was overwhelming. "I was bawling in victory lane with him," he said. "Eric won a lot of motocross races, and I thought I'd never see my son win again. And he started winning."

YOUR TURN

For racers confronting similar challenges, our sources offered advice both practical and spiritual.

Although Adaptive Driving Experience is not a driving school, would-be drivers occasionally approach them for advice. "I do get, occasionally, somebody who reaches out and says, 'I want to race, what do you suggest I do?'" Chrissanthis said. "My answer always is, 'I can't answer that question. You're the one going into the corner at 90 mph or 120 mph or whatever kind of racing you're doing. You're the one who has to be in control of that car. Only you can say what it's going to take for you to be comfortable doing that.'"

Once the decision to race is made, there's more involved than simply outfitting the car with adaptive parts. "I would strongly recommend that any track they go to, that the safety crew knows that that person is paralyzed and show them how to get him or her in and out of the race car. Very important," Irish Saunders said. "Get there early and make a point to go to the promoter or tech guy, or whoever it is, and say, 'Hey, I want you to come over here, and I want to show you how to get him in and out of the race car.'"

Practical aspects aside, for many former or aspiring racers dealing with physical challenges, the mental and spiritual side of the equation is the taller mountain to climb.

"Surround yourself with supporters, and distance yourself from doubters," Parker advised. "When you're trying to accomplish something like I've accomplished, everybody's going to tell you, 'It can't be done, you're crazy, that's impossible.' But you have to believe in yourself, and you've got to have blind faith." PRI

SOURCES

Adaptive Driving Experience
adaptivedrivingexperience.org

The Blind Machinist
theblindmachinist.com

Bryan Herta Autosport
bryanhertaautosport.com

Saunders Racing
facebook.com/SaundersRacing/

CREATING A PATHWAY TO COMP

WITH MAJOR SANCTIONING BODIES AND MANY AUTOMAKERS NOW OFFERING DEDICATED PROGRAMS, HIGH-PERFORMANCE DRIVING EVENTS ARE BECOMING PREEMINENT MOTORSPORTS GATEWAYS.

For decades, autocross events have served as the starting point for the careers of countless racers. The format's low operating costs and ability to cater to street-driven vehicles have made it a natural entry point for drivers who are looking to better understand the dynamic limits of their car and improve their skills while doing so.

But with the influx of formidable factory-built performance vehicles produced in recent years, sanctioning bodies as well as the OEMs themselves have sought ways to give drivers another venue to explore the full capabilities of these machines.

This has ushered in the era of high-performance driving events, or HPDEs. These programs follow an ethos similar to grassroots autocross events and focus on minimizing the barriers to entry through low costs and basic car preparation requirements. And much like autocross events, participation in HPDE programs also provides an opportunity for these drivers to get connected to a motorsports-minded community of enthusiasts.

Held throughout the country, these programs vary in format and mission from one organization to another—and sometimes even from region to region within an organization. But one truth remains consistent throughout: A growing number of today's racers are getting their start in high-performance driving events.

SPORTS CAR CLUB OF AMERICA

While the Sports Car Club of America (SCCA) in Topeka, Kansas, has long offered HPDEs during race weekends largely as a way of providing racers additional practice sessions in the lead-up to competition, the

sanctioning body decided to take a more strategic and formalized approach to the concept when it introduced Track Night in America in 2016.

The nationally offered program provides enthusiasts of varying levels of experience the ability to push their street cars on some of the most famous race tracks in the nation. As the name implies, Track Night in America differs from most HPDE programs due to the fact that most of these events begin in the afternoon on a weekday rather than the traditional morning on a weekend.

"Access was the core concept," explained the SCCA's Dan Dennehy-Rodriguez. "We wanted to break down as many barriers to entry as possible so that whoever wants to pursue going on track in their car is able to do so in an enjoyable way. And a big component of that is scheduling. Doing this in the afternoon during the week allows someone to take a half-day from work rather than committing a full day or a weekend to it."

The events typically consist of three 20-minute sessions on track, and instructors are onsite to teach participants the fundamentals of track driving. Dennehy-Rodriguez said that while some of the drivers who come back to participate in multiple Track Night events are mainly interested in experiencing the various race tracks that the program visits, others have used Track Night in America as a steppingstone into solo and wheel-to-wheel racing within the SCCA.

"There are so many stories of folks using Track Night as that pathway, but the one that immediately pops in my head is about my friend Alan," Dennehy-Rodriguez explained. "He has always had an interest in cars and works in the industry, and when the Track Night program began, he started taking

Photo courtesy of Porsche Club of America

ETITION

By Bradley Iger

The SCCA's Track Night in America series expanded its traditional HPDE program by providing enthusiasts of varying experience levels the ability to push their street cars on some of the most famous race tracks in the nation.

some of his show cars out to these tracks. After a while, he decided to take one of those cars—a late 2000s VW GTI—and convert it into a prepped race car. In 2021, he made his debut at the Runoffs at Indianapolis in the T3 class, driving something that had been a street car just two years prior."

He said that while folks who bring late-model Corvettes and 911s may have the financial flexibility to invest in a dedicated race car and hauler, more often than not it's the drivers who show up with the relatively inexpensive vehicles who are more likely to commit to a competitive effort down the road.

"In our experience, if someone wants to go road racing and they have the financial means, they tend to go straight to that destination," he continued. "They might have a personal car that they take to HPDEs on occasion, maybe for additional instruction or to see new track layouts. Generally, what we see with folks who have these really fast cars is that they'll quickly recognize the performance potential of the car and add safety elements to it, but then they'll stop there. For us, it's the person who shows up in a $5,000 hatchback. Those folks are more inclined to see that vehicle as a disposable item, and they're more willing to cage it, track it, and race it as a result. We see that with a lot of early 2000s hatchbacks like the Volkswagen Golf and Honda Civic, along with more affordable sports cars like the Mazda Miata, Scion FRZ, Subaru BRZ. Older BMWs and Ford Mustangs are popular options as well."

As drivers gain experience through Track Night program participation, they're invited to share in-car video with SCCA partner Blayze to help improve their technique through online coaching. Track Night participants can also maintain a driver logbook that can track their progress if time trials or road racing is their end goal.

"This isn't the logbook that goes with a race car," he explained. "This is specific to the driver. Every time they go to a Track Night and they're a good citizen at the event, they can go to an instructor and get signed off for that event. That shows us that this is someone who is playing by the book, wants to get a lot of experience, and is focused on developing as a driver. And when that driver wants to move into Time Trial, that logbook can be used to instantly upgrade them from a novice time trial license to an intermediate or even advanced license. The logbook provides evidence that they're ready, and we can trust them in those groups. If they continue to do well in Time Trial and express the desire to go road racing, they can then go to a region's competition school to take that next step."

NASA has a tiered HPDE program that starts drivers in HPDE 1 with an instructor in the passenger seat. "Here we introduce them to the fundamentals, and the joy of driving fast on a race track," said Brett Becker.

HOOKED ON DRIVING

Established in 2004 and expanded into a national program in 2007, Hooked On Driving in Copperopolis, California, focuses on getting drivers up to speed using the core principles of safety, fun, and learning.

"The line that is repeated in our drivers' meetings is, 'Hey gang, welcome to Hooked On Driving. Just remember, it's not Hooked On Racing," said founder David Ray. "There are so many highly capable road cars available now, and there's nowhere to drive them. The goal here is to give these folks the opportunity to do that and provide an entry-level taste of track driving."

Ray said that while some folks who come to Hooked On Driving events are content to settle into HPDEs as their pastime and focus on honing technique simply for the sake of their own gratification, there's a percentage of drivers who eventually start eyeing motorsports as the next natural step.

"Events like these can provide a great primer for an SCCA or NASA competition school. They're able to walk into those programs with a lot of the fundamentals already figured out. That means they're able to focus more on learning the rules, protocols, and race craft."

Ray cited an orthopedist who ran his Porsche Boxster Spyder at Hooked On Driving events for a number of years before moving into wheel-to-wheel competition with the SCCA. "Eventually he was running the car on Hoosiers, and I started to realize that he was probably the fastest driver in our advanced group despite the fact that there were potentially faster cars in the field. At a certain point I pulled him aside and said, 'You really need to go racing.' He was immediately dominant in Spec Miata, and now he's dominant in Spec Racer Ford."

While Hooked On Driving teaches safety

ROBINS™ SINCE 1983 -0+ Exactly

Signature brand

CYLINDER HEAD GUIDE MACHINING

- Automatic Guide Honing
- Core Drilling
- Reaming

WORLD'S FIRST

AUTOMATIC VALVE GUIDE MACHINING SYSTEM

- Automatic Honing Cycle
- Automatic Ream & Hone cycle
- Automatic Cross Hatch & Plateau

SCAN TO WATCH

Guide Honing Video
Stock removal 0.006"
Run time One minute

Machines displayed may include optional accessories

AUTOMATIC VALVE GUIDE MACHINING SYSTEM

(For Engine Builders)

Accurate to 0.0001" (0.002 mm) Automatically!

ROBINS SINCE 1983 -0+ Exactly

1983 40 Years of Excellence 2023

/robinsmachines | rc@RobinsMachines.com | www.RobinsMachines.com

youtube.robinsmachines.com

Eastern U.S.A

MEC CNC

Anthony Usher (949) 800-7176

anthony@meccnc.com | www.meccnc.com

Western U.S.A

Hopper HOPPER EQUIPMENT

Jeff Murchison (909) 226-9922

Jeff@HopperShop.com | www.HopperShop.com

EVERY CUSTOMER SINCE 1983 HAS BEEN "ROBINS-TESTIMONIAL"

and the basics of track driving, it will also suggest professional coaches to drivers at the higher levels of experience who are looking to take their abilities to the next level. "We like to focus on teaching the fundamentals—we're really good at that," Ray said. "At the higher levels, we're going to give these drivers a list of coaches who do that for a living. That approach seems to work for us."

Ray added that while OEM programs like the Cadillac V-Performance Academy and BMW Driver's School are able to capture enthusiasts' attention early on with track time that's included with the purchase of a new vehicle, those programs tend to generate more interest in HPDEs rather than taking it away.

"On one hand, the manufacturer programs are reducing the number of days that are available to us at a given track," he noted. "But on the other hand, we are inheriting people from those programs. The manufacturers are ultimately helping to create that long-term interest in HPDEs with these drivers."

PORSCHE CLUB OF AMERICA

It should come as little surprise that Porsche was one of the first automakers to recognize the value of a formalized owners' club and the organization of performance-focused events for members to participate in. The brand's strong ties to motorsports as well as a dedicated fanbase led Porsche Club of America (PCA) in Columbia, Maryland, to begin hosting enthusiast events way back in the mid-1950s.

By the 1990s, the Porsche Club of America was ready to take things a step further, establishing its own Club Racing series. Today, PCA Club Racing hosts more than two dozen races per season as competitors chase championship trophies in their respective classes. And as PCA Club Racing business manager Connor Henderson pointed out, many of the club's competitors established their path toward the podium through the PCA high-performance driving events.

"The HPDE program is about giving these owners the opportunity to get these out on track. Motorsport is what the brand is built on, so it's a natural step for a lot of these drivers," Henderson said.

PCA's high-performance driving events typically consist of five track sessions over the course of a day. Instructors accompany the students for the first three sessions, then the students run a fourth session by themselves. An instructor then hops back in for the final session to provide additional real-time feedback and coaching.

"That fifth session gives us a chance to discuss any questions that might have come up," he told us. "Inexperienced drivers might not know where they can focus on improving, so that feedback is really important." He said that while drivers join PCA and sign up

for HPDEs for myriad different reasons, the overarching theme is a desire to do more with their cars.

"Some are the folks who have 20-year-old cars and finally have the financial freedom to do a track day. We also see a lot of father-and-son teams, but it's all over the map. Last year we had a lady in her 70s who had watched a Formula 1 race and had decided it was time to get on track for the first time. It really takes all kinds."

Once the basics are established, the program's emphasis on coaching and feedback allows drivers to focus on ways to improve their performance. "That's when you start to see the more in-depth questions," Henderson said. "They start asking about how they can better prepare the car, and how they can better prepare themselves as a driver—what they need to do to be faster. And within that, there's always a select group of drivers who want to be the best, and once they've achieved a goal that they've set out for themselves, they're ready to move on to a bigger challenge through competition."

Founder David Ray said the goal of Hooked on Driving is to "provide an entry-level taste of track driving. There are so many highly capable road cars available now, and there's nowhere to drive them."

As with sanctioning bodies like the SCCA and NASA, those seeking to make the transition from the HPDE program to PCA wheel-to-wheel racing must earn their provisional license by attending

Participants in the SCCA's Track Night in America maintain a logbook that's signed off at each event. "That shows us that this is someone who wants to get a lot of experience and is focused on developing as a driver," said Dan Dennehy-Rodriguez. When that driver is ready to move into Time Trial, "that logbook can be used to instantly upgrade them to an intermediate or even advanced license."

the PCA Club Racing school. Henderson said that while they often recommend that these folks consider starting in Spec Boxster—the club's most popular racing class—some drivers are a bit more ambitious.

"We had this retired gentleman who brought a 911 GT3 to his first track day and immediately took to it. He told us about how much he enjoyed it, and we noted that if he was interested in doing so, he could pursue racing. Despite our initial recommendations, he bought a GT3 Cup car with a 997-generation 911 GT3 RSR engine shoehorned into it—a combination that was built for a Continental series. He hired someone to work on his car and a pro driver to coach him, and he ran it in our GTA3 class. Later he decided to move to a 991-generation Cup car and race it in our GTC7 class because it offered an even higher level of competition."

PCA Club Racing events typically consist of sprint races as well as 60- to 90-minute enduro races, the latter of which allows for driver changes and more seat time. While that offers plenty of competition for most, Henderson said that a number of club members have also ventured out into grassroots endurance racing, IMSA, and other series.

"Those tend to offer a different form of competition, and we fully respect that. A lot of times we see folks do that, and then later come back to race with PCA. At the end of the day, the camaraderie is the most important element of our Club Racing program," Henderson added.

NATIONAL AUTO SPORT ASSOCIATION

Las Vegas, Nevada-based National Auto Sport Association's approach to HPDE notably is more structured than some others, focusing on progression through experience and offering well-defined pathways into auto racing for those who are interested in that pursuit.

"Our HPDE program has been essentially the standard of the industry ever since we established it back in the 1990s," said NASA's Brett Becker. "We start you off in HPDE 1 with an instructor in the passenger seat of your car, and typically you'll have communication devices inside each of the helmets so they can talk to the drivers in a calm manner. Here we introduce them to the fundamentals, and the joy of driving fast on a race track."

"LAST YEAR WE HAD A LADY IN HER 70s WHO HAD WATCHED A FORMULA 1 RACE AND HAD DECIDED IT WAS TIME TO GET ON TRACK FOR THE FIRST TIME."

Becker reported that many of NASA's HPDE program participants are enthusiasts who started off in drag racing or autocross and wanted more track time. In recent years, the sanctioning body's partnership with Toyota has also provided an access point into the greater National Auto Sport Association ecosystem for those who may not have had formalized experience through those other disciplines.

"We established the Toyota GR Experience in 2019, and the program continues to expand," Becker said. "Initially the buyers of new GR Supras received a one-year NASA membership and participation in a one-day NASA HPDE as part of that purchase. Now the program has been extended to buyers of new GR86s as well as new GR Corollas."

There are driver meetings after each on-track session for all of NASA's HPDE groups, which allows instructors to offer feedback based on what they observed during the previous session and provides participants with an opportunity to voice any concerns they may have. Once HPDE 1 drivers are up to speed on the basics, they have the opportunity to move up to HPDE 2, which allows participants to drive

by themselves as they continue to hone their skills.

"HPDE 3 and 4 are where things start getting pretty quick," said Becker. "If a driver doesn't have the pace for these groups, they stay in HPDE 2 until they've developed it. HPDE 3 and 4 are also where drivers start to learn more advanced driving techniques that are essential to developing speed. For example, in HPDE 1 and 2, the students are taught to do all of their braking in a straight line and then steer the car into the turn. In HPDE 3 and 4, we start to introduce concepts like trail braking, where applicable. For drivers of all stripes, usually the last bits of speed that they can muster are found under braking."

After drivers have completed HPDE 4, they are eligible to get their Time Trial license, or they can opt to get their racing license through NASA's competition school if they so choose.

"I'm a product of that system," Becker noted. "I used HPDE as a means to go racing. I progressed through the ladder system, and then went straight to competition school. But we've also had people who've come to us through the Toyota program who are now Time Trial drivers. One of the guys from our Northeast region got a Supra, came for the track day and fell in love with it, and now he's driving that same car in TT. Over the years we've had a number of racers who started out with the intent of just sticking to HPDE. But of course, driving a car fast on a race track is intense, addictive, and very alluring. When the bug bites, it bites hard." PRI

SOURCES

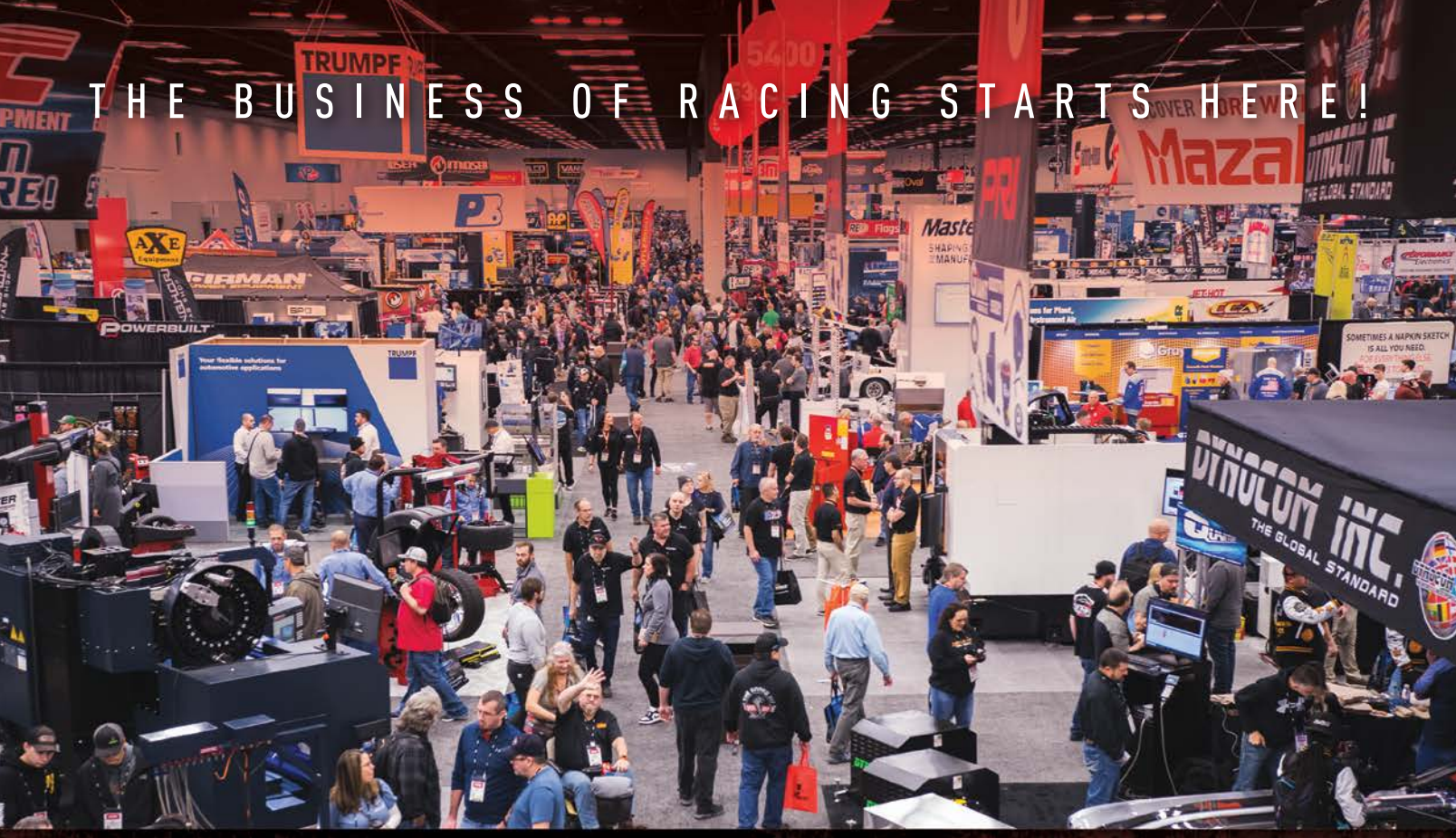
Hooked On Driving
hookedondriving.com

National Auto Sport Association
drivenasa.com

Porsche Club of America
pca.org

Sports Car Club of America
scca.com

THE BUSINESS OF RACING STARTS HERE!



PRI SHOW

DECEMBER 12-14, 2024 | INDIANAPOLIS

NOW ACCEPTING BOOTH APPLICATIONS FOR THE 2024 PRI SHOW

DECEMBER 12-14, 2024 | INDIANAPOLIS, INDIANA

VISIT PRISHOW.COM TO RESERVE YOUR BOOTH SPACE TODAY!

HOW NASCAR'S NEXT GEN CAR PLATFORM BECAME AN INTERNATIONAL LAUNCHING PAD.

OPEN

Photos courtesy of Getty Images

ENTRY

By Jack Haworth

It's often a little moment when the reality of a massive accomplishment sets in.

NASCAR's Garage 56 entry had just completed the 24 Hours of Le Mans, a historic achievement in which a modified NASCAR Cup Series car competed on the same track as Hypercars, LMP2 cars, and GT cars in the legendary endurance race. It was the culmination of a collaborative effort led by IMSA President John Doonan.

Amid the post-race hype and congratulations, Doonan visited a local cathedral the following day for a moment of solitude. However, it wasn't long before a man and his son noticed Doonan's Garage 56 jacket and came up to him with an unusual request. They wanted Doonan to take a video of them.

"In the video, they're wearing 24 Hours of Le Mans hats, and the guy says, 'I never watched NASCAR before and I live in Miami, but I can assure you after what I saw with the Garage 56 project, when I go home, I'm going to go to the Homestead race and try to tune in and learn more because they opened my eyes,'" Doonan recalled. "For me, that was a big milestone."

How did NASCAR reach a point where new fans were so fascinated by the sport that they were making testimonial videos at a French cathedral? That story begins in 2018, when development began on the NASCAR Cup Series Next Gen car.

GENESIS OF NEXT GEN

"The platform we had, while it had served us well, it was getting old and wasn't as relevant to our existing OEMs anymore," said John Probst, NASCAR senior vice president, chief racing development officer. "The suspensions on them got pretty antiquated, so we had the opportunity to start with a clean slate."

Probst and his development team went to work on the Next Gen car. They modernized the car with significant upgrades including an independent rear suspension, rack-and-pinion steering, transaxle, larger brakes, 18-inch forged aluminum wheels with a single lug-nut design, and wider tires. They also made significant aerodynamic adjustments, sealing the bottom of the car with an underwing and rear diffuser, while adding hood louvers to maximize engine performance independent of aero.

"As we were designing the new car, we were keeping an eye out for not just the powertrains, but how relevant our car topology is to the rest of the world," said Probst. "The idea was not only to attract new [team] owners, but how can we try and attract drivers from all over the world."

"THE IDEA WAS NOT ONLY TO ATTRACT NEW [TEAM] OWNERS, BUT HOW CAN WE TRY AND ATTRACT DRIVERS FROM ALL OVER THE WORLD."

Significant changes to the car's anatomy made it more akin to traditional GT cars, while the sanctioning body also mandated the use of single source supplied parts. The latter was done to reduce development costs for teams and achieve more parity in the Cup Series. In 2022, the Next Gen car's first year on track, the Cup Series saw a record-tying 19 different winners and success from newer teams including Trackhouse Racing (co-owned by Pitbull and Justin Marks) and 23XI (co-owned by Michael Jordan and Denny Hamlin).

NASCAR's Garage 56 entry beat the fastest GT car in the field by nearly four seconds a lap during qualifying for the 2023 24 Hours of Le Mans. More importantly, the car finished the legendary endurance race and "fans absolutely loved it," said IMSA President John Doonan.

The on-track success of the Next Gen car in 2022 was a positive step, but NASCAR Chairman and CEO Jim France saw the car as an opportunity to do something historic on the world stage—at Le Mans.

TAKING ON LE MANS

In 1976, France's father, NASCAR founder Bill France Sr., had the vision to take two Cup Series cars to Le Mans, France, and compete in the 24 Hours of Le Mans. Unfortunately, both the Ford Torino and Dodge Charger failed to reach the halfway point of the race before retiring. Fast forward nearly 50 years, and the Next Gen car provided a platform to not only complete the race, but to be competitive. NASCAR was ready for another shot at Le Mans.

Of course, a good platform is not the same as a race-ready car on the starting line of a 24-hour race. The Next Gen car would require significant modifications that would take a collaborative approach from NASCAR and various partners.

That is where Doonan and the International Motor Sports Association (IMSA) team came into play. While NASCAR and IMSA are both owned by the France family, the two organizations had historically operated separately. The Garage 56 program marked a turning point in that relationship.

"The whole Next Gen project and how that morphed into the Garage 56 effort has pretty much blurred the lines between NASCAR and IMSA," explained Probst. "I would say now in retrospect, this has been a project that we've all kind of unified around even beyond the car, with our relationships across the company."

In addition to NASCAR and IMSA, the Garage 56 collaboration recruited Chevrolet, Hendrick Motorsports (HMS) and Goodyear. The IMSA component was crucial, as its expertise in endurance racing and international relationships with the Automobile Club de l'Ouest (ACO) and the Federation Internationale de l'Automobile (FIA) helped pave the way and inform NASCAR and HMS engineers how to best develop an endurance car for Le Mans.

Starting with a 5.8-liter V8-powered Chevrolet engine from HMS, the Garage 56 team made various adjustments to the car. Changes included adding real headlights and taillights, a larger fuel cell, eliminating nearly 500 pounds of weight (compared to a current Cup car), and making various aerodynamic modifications to increase downforce, including dive planes and underbody adjustments to the front splitter and rear diffuser. "From an aero perspective,

ROBINS
SINCE 1983
Signature brand

-0+ Exactly

RUBI SURF
Heavy Duty
Cylinder Head Surfacing Machines

RUBi SURF
1.9 Heavy Duty Automatic

RUBi SURF
1.7 Smart Automatic

SCAN TO WATCH

ROBINS..First
KEEP BOTH
V- Block fixture & Cyl. Head Tilt fixture
on machine base while surfacing
either Cyl. Head or Cyl. Block

SG12 SMART
SEAT and GUIDE MACHINE

SEAT AND GUIDE SMART SERIES WITH DUAL- MICRO- CENTERING SYSTEM
NEAR ZERO VALVE SEAT RUN-OUT

Machines displayed may include optional accessories

ROBINS SINCE 1983 -0+ Exactly
40 Years of Excellence 1983 2023
/robinsmachines | rc@RobinsMachines.com | www.RobinsMachines.com
youtube.robinsmachines.com

Eastern U.S.A
MEC CNC
Anthony Usher (949) 800-7176
anthony@meccnc.com | www.meccnc.com

Western U.S.A
HOPPER EQUIPMENT
Jeff Murchison (909) 226-9922
Jeff@HopperShop.com | www.HopperShop.com

EVERY CUSTOMER SINCE 1983 HAS BEEN "ROBINS-TESTIMONIAL"

From the independent rear suspension to the rear diffuser and single lug-nut design, NASCAR's Next Gen Cup car was designed "with an eye for how relevant the car topology is to the rest of the world," said NASCAR Chief Racing Development Officer John Probst. More akin to traditional GT cars, "the idea was not only to attract new [team] owners," but also "to attract drivers from all over the world."

we actually doubled the downforce on the Garage 56 car," said Probst. "The majority of that was underneath the car."

While Garage 56—a single entry "innovative car" category—does not have any in-class competition, the ACO provided NASCAR with a target lap time to be midfield of the GT cars. When it came time to qualify, Mike Rockenfeller pushed the car to a lap time of 3:47.976, nearly four seconds faster than the quickest GT car in the field, a Ferrari 488 GTE.

"I don't think any of us could be more proud of how we performed over there," said Doonan. "We certainly hit expectations on Day One, in terms of lap time performance the ACO was hoping for. Then they asked us to go quicker, and fortunately, thanks to John Probst and his team, we had the capability to do that."

Fans quickly took notice.

"You just had this constant buzz about the American car that was there," said Chad Seigler, NASCAR chief international officer. "Whether that was the difference in the look of the car, the sound of the car, there was a buzz around the venue that week."

During the race itself, an all-star driver roster consisting of seven-time NASCAR Cup Series champion Jimmie Johnson, 2009 Formula 1 world champion Jenson Button, and two-time 24 Hours of Le Mans winner Mike Rockenfeller shared responsibilities for piloting the car around the 8.4-mile Circuit de la Sarthe. The Garage 56 entry showed strong pace in the race, completing 285 laps (2,413.1 miles) and finishing 39th place in the 62-car field. Fittingly, it was Johnson who brought the car to the checkered flag in the race's final stint.

"I thought the fans would like it when we got over there, but they absolutely loved it," said Doonan. "I think we made a huge impression on what NASCAR is as an overall brand. And I think it's a compliment to John [Probst] and his team on what the Next Gen car is all about because it's very akin to the GT cars that we run. I think it had everybody starting to think more about what NASCAR is about and the capabilities of the new car."

CAPITALIZING ON MOMENTUM

The "capabilities of the new car" is an important consideration. For the first time, a NASCAR Cup Series car shares design characteristics with GT cars that have long dominated the international racing scene. That pivot to a more modern car design is creating opportunities for the sport that didn't exist a few years ago.

"Two or three years ago, I would not have guessed we'd had this car at Le Mans running, and then running as well as it did," said Probst. "I'm just really excited for the future of not just this car and where it's going, but our relationship with the IMSA side and growing that."

The on-track performance grabbed attention, but NASCAR capitalized on their Garage 56 success with a carefully planned outreach strategy.

"I think it's probably easy for a lot of people to look at what happened during that 24-hour run there, but the build-up and those several months after [the race] were key for us," said Seigler.

Shane van Gisbergen, a three-time Australian V8 Supercars champion, became the first driver in 60 years to win in his first NASCAR Cup Series start. Since his 2023 win in Chicago, the New Zealand-born racing star signed a multiyear deal with Trackhouse Racing for a full-time opportunity in NASCAR.

After leaving Le Mans, Seigler and the NASCAR team visited London to hold a partner summit with 70 decision makers,

including track promoters, broadcast partners, potential team owners, investors, and others. Seigler's team also restructured the NASCAR Whelen Euro Series calendar to move their race at Brands Hatch in West Kingsdown, England, to the weekend immediately following the 24 Hours of Le Mans. The race attracted 41,000 people, setting an attendance record for the Euro series.

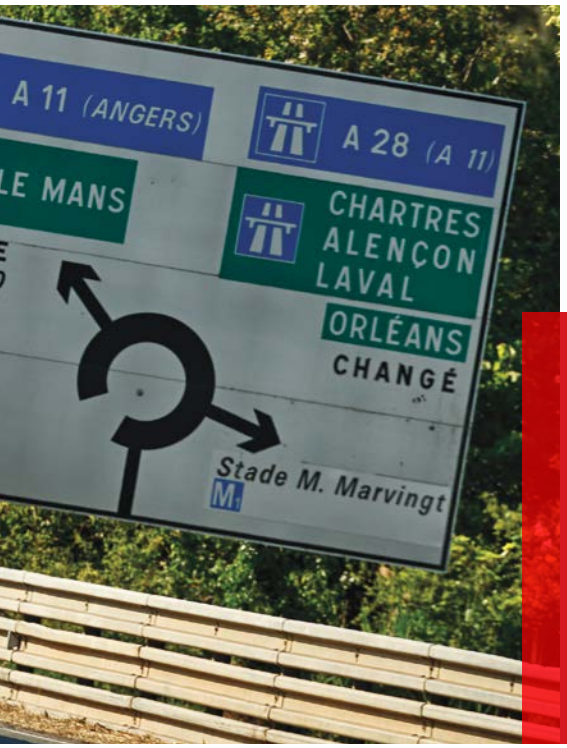
"There are places we go in the US where 40,000–50,000 is a big number," said Seigler. "Not just for motorsports, but all sports. So that was a positive."

To cap off their summer, they brought the Garage 56 backup car to the Goodwood Festival of Speed Hillclimb in West Sussex, England. The final European stop resulted in further exposure to the European market, as Rockenfeller and Button revved up the crowd with burnouts and thunderous runs up the 1.16-mile hill climb.

NEW DRIVERS, NEW COUNTRIES, NEW FANS

Back in the States, a flurry of circumstances converged to deliver one of the most unlikely Cup Series victories in recent years and pique the attention of international drivers around the world. Shane van Gisbergen, a three-time Australian V8 Supercars champion, became the first driver in 60 years to win in his first NASCAR Cup Series start, pulling off the upset during a soggy race on the streets of Chicago. The New Zealand-born driver was hooked immediately, eventually signing a multi-year deal with Trackhouse Racing to come to America for a crack at NASCAR.

Van Gisbergen's victory not only displayed the Kiwi's raw driving talent, but also the Next Gen car's potential to attract other international drivers. In fact, the 2023 Australian V8 Supercars champion, Brodie Kostecki, signed a deal with Richard Childress Racing to run a limited number of Cup races in



2024. Unconfirmed rumors suggest they aren't the only V8 Supercar drivers with an eye on competing in NASCAR.

"I think that in a lot of ways, our car is not all that different than an Australian V8 Supercar," said Probst. "Certainly, in the way they handle."

Beyond Australian drivers, other international drivers including former F1 drivers Jenson Button and Kimi Raikkonen also competed in Cup races during the 2023 season. As Seigler explained, international drivers coming to NASCAR doesn't just diversify the starting grid, it also opens the gateway to an entire country. "Traditionally what we see when a [driver] from a foreign country comes in, you pull in that country's motorsport fans with them because there's a rooting interest. It's that patriotic moment."

After 24 hours and 2,413.1 miles, NASCAR's Garage 56 entry completed the 2023 edition of the 24 Hours of Le Mans following a historic collaboration between NASCAR, IMSA, Hendrick Motorsports, Chevrolet, and Goodyear. IMSA's John Doonan believed the effort "made a huge impression on what NASCAR is as an overall brand," while NASCAR's John Probst championed future collaboration, "the Garage 56 effort has pretty much blurred the lines between NASCAR and IMSA."

THE NEXT ERA

The Garage 56 effort and van Gisbergen's win were both major international victories for NASCAR. Those two events happening within a month of each other only amplified the attention and helped to grow the sport's international footprint. "Those all coming together was kind of a perfect storm," said Seigler. "There's a lot more wind at our back right now."

It's a new era for NASCAR, and the sport's leaders seem to have calculated that growth

requires shaking up the status quo. On the digital front, it just launched a new Netflix documentary series, NASCAR: Full Speed, while its new seven-year media rights deal that begins in 2025—worth an annual value of $1.1 billion—includes five races each season that will be streamed exclusively on Amazon Prime. Of course, the on-track product is most important, and the Next Gen car represents a major departure from its previous-generation stock cars. After two years on track, the results are exceedingly positive.

Nevertheless, Probst and his team continue to tweak on the car. In fact, data from their Garage 56 effort in Le Mans contributed to aero changes NASCAR applied for the 2024 season.

"As we go through and try to improve the packages that we run in the Cup Series, we're able to start with some of the concepts that we actually raced at Le Mans, even for some of the short-track-package updates that we made for this year," said Probst. "So any time we're able to put a race car on track and try something different, even if it's for a road race effort at Le Mans, our engineers back here at the R&D center are paying particular attention because these are lessons learned that we can apply in other forms of our race product."

As NASCAR enters its 76th year, the sport isn't shying away from change, and the Next Gen car is leading the charge into the future. The sanction debuted an all-electric race car at February's pre-season Clash at the Coliseum in Los Angeles, though there are no current plans for an electric series at this time. From a powertrain perspective, Probst and his team are exploring everything from hybrid to hydrogen. "One of the tenets of the whole Next Gen project was to have a platform that would enable us to react to a lot of the trends we see coming from a powertrain perspective."

Undoubtedly, some detractors will decry these significant changes, clinging to nostalgic visions of the past. But change is an unstoppable and constant force, one that NASCAR has chosen to embrace rather than fight.

With the success of Garage 56, a closer collaboration with IMSA, an embrace of new vehicle technologies, and an influx of talented international drivers and their fans, the sport known for left turns may have made the right turn, at the right time. PRI

SOURCES

IMSA
imsa.com

NASCAR
nascar.com

SEE YOU IN INDY AT THE 2024

PRI SHOW

DECEMBER 12-14, 2024 | INDIANAPOLIS, INDIANA

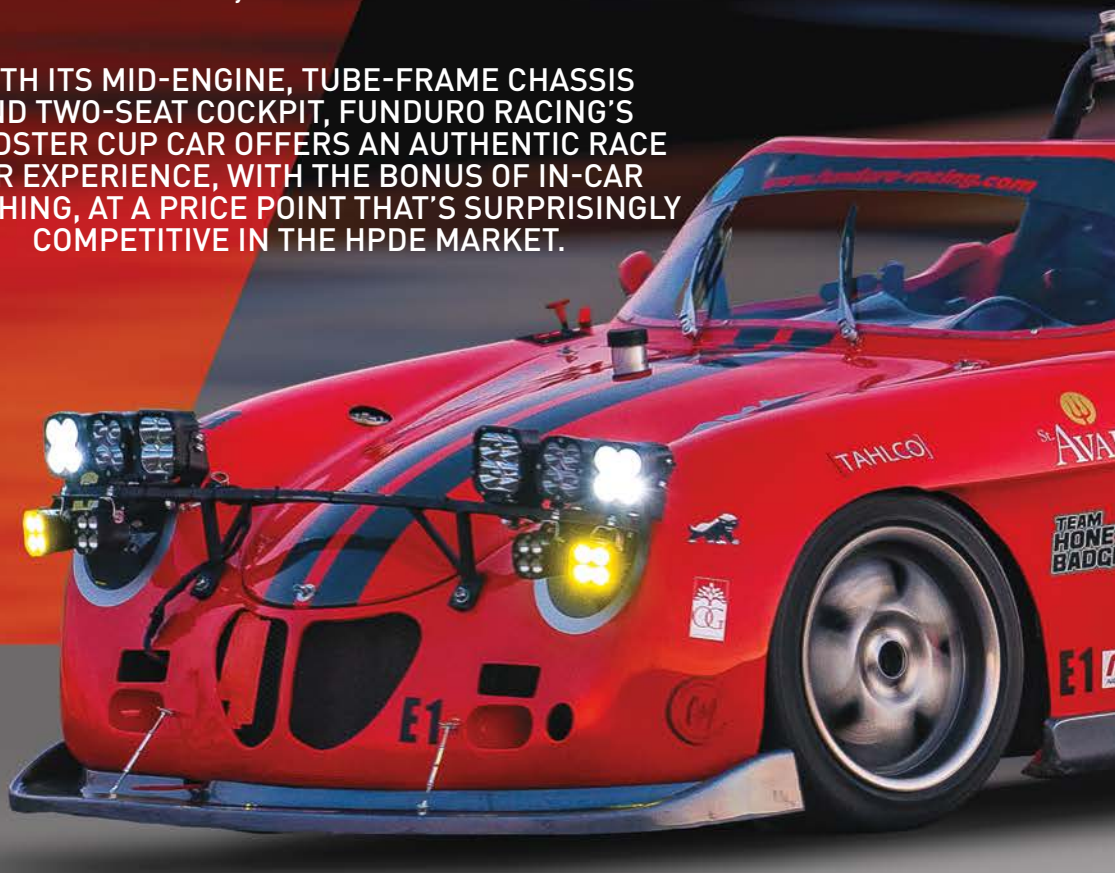
NOW ACCEPTING BOOTH APPLICATIONS
VISIT PRISHOW.COM
TO RESERVE YOUR BOOTH SPACE TODAY!

BUSINESS PROFILE

FUNDURO RACING

By John F. Katz

WITH ITS MID-ENGINE, TUBE-FRAME CHASSIS AND TWO-SEAT COCKPIT, FUNDURO RACING'S ROADSTER CUP CAR OFFERS AN AUTHENTIC RACE CAR EXPERIENCE, WITH THE BONUS OF IN-CAR COACHING, AT A PRICE POINT THAT'S SURPRISINGLY COMPETITIVE IN THE HPDE MARKET.



Nicolas De Keijser is on a mission to bring the motorsports experience to the masses. "How can I democratize access to race cars?" is the question that drives him. "Making the fun of racing accessible to all—that's what I'm looking for."

Nestled in the paddock at Thunderhill Raceway in Willows, California, De Keijser's Funduro Racing seems like a good start toward his stated goal. Keeping the business model simple, Funduro rents seat time in the company's own Roadster Cup race cars for high-performance driving events (HPDE), private track days, and, for qualified drivers, real competitive racing in a range of West Coast enduros, including the 25 Hours of Thunderhill, where in 2021 the Funduro team finished first in Class E1. "It's all 100% arrive and drive," De Keijser added. "I own the cars, and I rent the seats. I make it simple, so everyone has a good time."

REAL RACE CARS

What makes Funduro "fairly unique," De Keijser insisted, is "the cost of what I offer for a real race car experience." He brings his own impressive background to the table: More than 20 years of endurance racing, including 10 years in various European Touring Car series, as

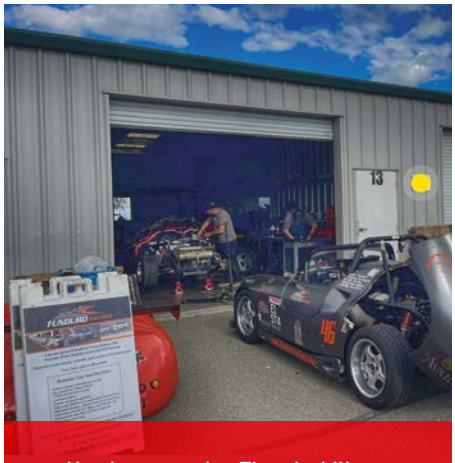
well the VW Fun Cup, a spec series which his father, Benoit De Keijser, co-founded in 1996. But Nicolas would prefer to talk about Funduro's Roadster Cup cars, which he and his father helped develop in 2004 as "a natural progression" of the VW Fun Cup. Like the Beetle-bodied Fun Cup, the Porsche-esque Roadster Cup is powered by a relatively economical 1.8- or 2.0-liter VW-Audi engine mounted just ahead of the rear axle in a purpose-built, tubular space frame. Roadster Cup cars raced in the Belgian Touring Car Series (BTCS) and enjoyed their own spec series in 2005–2010. And because they are engineered purely as race cars, said De Keijser, Roadster Cup cars deliver a more visceral driving experience than any street car that's been modified for racing.

"The car is very analog," De Keijser explained. "It has no driver aids. It has a manual gearbox, no power steering, no power brakes, so you get a lot of feedback. You are driving everything. It's high-performance, but it's approachable." And because the mechanically simple Roadster can be maintained for literally a fraction of the cost of a newer, high-performance road car, Funduro can offer HPDE at prices "comparable to a Miata rental. Miatas are great, but we give you a race car feel you can't get in a Miata."

"It might even be a bit more affordable than renting a Miata," commented Jo Voordeckers, who drove track days in Belgium, France, and

Germany—on the Nürburgring, in fact—before emigrating to the United States, where he met De Keijser through mutual friends. "I've driven a spec Miata, and there is a night-and-day difference. A fully prepped, fully built race car is so different from a production vehicle that has been beefed up so you can drive it on a track. From the first time I got in a Roadster Cup I knew exactly what I wanted from that point on. My thoughts of buying my own car for track days or racing were over."

"The chassis is incredible, the brakes are incredible," explained Alex Garden, who campaigns an ex-Bill Brock Formula Atlantic race car when he's not driving with the Funduro race team. "It drives a bit like a slightly heavier shifter kart, and it can run with cars that, on paper, should be much faster." With just 160–180 hp, "it is a momentum car; you have to carry a lot of speed through the course, because it doesn't have a lot of juice to get going. But, man, it has crazy-good handling."



Headquartered at Thunderhill Raceway in California, Funduro Racing rents purpose-built, tube-frame Roadster Cup race cars for HPDE and other events. Funduro's rental prices are aimed at "democratizing access to race cars," said company founder Nicolas De Keijser.

Garden found the Roadster Cup "unbelievably predictable" and "very forgiving. You can push it way past the envelope, and it will let you know, 'Hey, you're here, and this is how much I have left.' Which is kind of fun because you can really hammer it."

Another important feature of the Roadster Cup is its two-seat bodywork, which allows De Keijser to accompany his customers on the track—"and in a race car," he noted, "that's hard to come by. It's something that we offer that is extremely valuable."

Voordeckers agreed that he "absolutely" gained confidence from De Keijser "sitting next to me and giving me pointers. He eased me into driving an actual race car—going from a production vehicle with ESP and ABS and road tires, to slicks and no assists. He'll say, 'It's okay, you can go faster. You can brake later. Listen, you can trust me.' These are things that someone has to tell you, or

you would stay far, far away from the limits."

"The part I enjoyed most was riding with Nick," added Tim Hurlbut, a 40-year veteran of time trials and track days, whose most recent ride was a fully race-built BMW E36. "When you watch someone who is truly talented, you clearly know what the car can do—and it gives you something to shoot for." When Hurlbut took the wheel, De Keijser "helped me drive the line and use the car's full capabilities. I really appreciated having the guy who owns the car sitting next to me saying, 'This is what will happen if you do this, and this is what will happen if you do that.'"

Nicolas De Keijser (right) brings years of his own racing experience to Funduro and enjoys coaching his customers. "We bring them through the whole idea of what it's like to drive a race car, and I think the uniqueness of that experience versus the cost is pretty amazing."

DOWN TO BUSINESS

That said, competitive endurance racing is as important to De Keijser as his HPDE business, and he divides his time about equally between them. "In terms of revenue, there is a bit more in racing, but track days are really stable," he explained. "They are a good business for keeping fixed costs under control, because with track days you can better predict how you are going to cover your costs. I have fixed costs such as shop rent, but [with HPDE] even the variable costs are easy to predict." Whereas with racing—an ironic laugh here—"things can go off in many directions."

Funduro's corporate (and other group) track days at Thunderhill Raceway can accommodate between 10 and 30 people, who bring widely varying levels of skill and familiarity with high-performance driving. "Often they are novices," De Keijser noted, "so they require a bit of coaching. Sometimes they have to learn how to drive a manual shift—and that's an interesting experience. But we bring them through

the whole idea of what it's like to drive a race car, and I think the uniqueness of that experience versus the cost is pretty amazing.

"But for the ultimate experience, we offer true private events, limited to one to four customers, and where we have exclusive use of the track. This provides the opportunity for enhanced one-on-one mentoring while also making the business more viable."

Always, De Keijser strives for "a pleasant, family-style atmosphere. My wife Ann, my children Matthew and Mika, and sometimes even my parents help with logistics, making sure that everyone is taken care of with food, accommodations, information, a place to change and relax, etc. Even our dog (and team mascot) Maui helps keep our guests entertained," he added.

Again, De Keijser emphasized how his HPDE and racing activities complement each other. "Could I make a living out of track days? No," he answered, "and I don't think anyone would ever tell you that they could. Even if you had good margins, you would need enormous volume. As I said earlier, it's a way to keep the cost of your race team under control—and if you have a good season in racing, you can grow your business that way."

FROM TRACK DAY TO TRACK CHAMPION?

It would be a mistake, also, to count on HPDE customers becoming racers. "I've seen a little bit of everything," said De Keijser. "I've seen people just stick to track days with us. I've seen people start with us, and they move on to a different platform, and that's fine. We also have customers who were already racing, and they rent our car because they want to try something new. And they become good customers.

"I think at the end of the day, someone who wants to race has a commitment

Competitive endurance racing is as important to Nicolas De Keijser as his HPDE business, and he divides his time about equally between them. In 2021, the Funduro team finished first in Class E1 at the 25 Hours of Thunderhill.

to racing—you need a certain level of commitment if you are going to race—and they will find a path that allows them to do that. It's not because they rented a car from me. They had it already in their mind."

Remember Voordeckers, who had considered "buying my own car for track days or racing" before his experience with Funduro? Early last year he drove in his first race, completing 90 minutes of a seven-hour event with the Funduro team at Sonoma.

"We have a number of racing customers that we have been working with for several years now," De Keijser added, "and new customers are coming in. Of course, there is some cycling, but ideally you can keep the customers for a longer time and do entire seasons with them. I enjoy developing a team and sharing my long experience with endurance racing in Europe.

"We run in NASA WERC"—the Western Endurance Racing Championship—"and in Lucky Dog," including events at Fontana, Willow Springs, Laguna Seca, and Sonoma. "We've done the 25 Hours of Thunderhill three years in a row."

Some of Funduro's more seasoned racing customers attested to De Keijser's organizational skills. Geir Ramleth, who runs a 1963 Lotus 23B in the Classic Sports Racing Group and competes in Formula Atlantic with a 1982 Ralt RT4, shared Funduro's class win at Thunderhill in 2021 and raced with the team again in 2022. He remarked on how De Keijser enlisted his family in the effort, "and they really knew how to run an endurance race. They planned the whole thing from beginning to end. It's not only getting the car ready. It's organizing work in shifts, cycling the drivers, assuring that people are getting fed and getting rest. And they knew exactly what to do."

"Nick is extremely well organized," agreed Oleg Gorshkov, who has competed in the 25 Hours of Thunderhill since 2016—with Funduro since 2018—and more recently joined a Porsche Cayman team in WRL GT1. With Funduro, "the car is extremely well prepared. I've been on teams where the car was not prepped at all, or it was prepped on practice day. With Nick, you show up and the car is ready. And the crew is very professional. He has seven or eight technicians for one car—which is a lot."

Funduro Racing customers appreciate how thoroughly the Roadster Cup cars are prepared for each event. "The crew is very professional," said one racer. "He has seven or eight technicians for one car—which is a lot."

"The cars are prepped correctly," Garden confirmed. "Everything runs on-schedule."

For Ramleth, just as impressive as Funduro's 2021 win was how well the organization held together when the mechanical parts didn't in 2022. "We had a couple of engines and a transmission go bad," Ramleth recalled. But in addition to his crew in California, "Nicolas had brought over a team of mechanics that he had worked with in Europe, and they did not know how to spell DNF. They just kept us going."

OBSTACLES AND ENDURANCE

Satisfied customers like these, De Keijser contends, are the best possible promotion. "I'm getting to be known, and when people talk about you, that's usually where new customers come from."

Of course, De Keijser is not the first to tell us that, nor is he the first to note the challenges of promoting a business through social media. "I have a Facebook page, I have Instagram, and I have my website, which is where I get the most Internet traffic. My social media presence is marginal, but that's self-inflicted. Social media has to be cultivated. You have to stay active on it or it's hard to stay relevant. For a website, the most valuable thing is to be prioritized by the search engine—and I am not, because that costs money."

"I REALLY APPRECIATED HAVING THE GUY WHO OWNS THE CAR SITTING NEXT TO ME SAYING, 'THIS IS WHAT WILL HAPPEN IF YOU DO THIS, AND THIS IS WHAT WILL HAPPEN IF YOU DO THAT."

One very simple, no-cost promotion that De Keijser does recommend is a marker showing his location on Google Maps. "My son Mika, who just started competitive karting, helped me with that. Now when people look up Thunderhill, they see the name of my company, too."

De Keijser expressed some frustration, also, with racing sanctions that "have no obvious class for my car," and so tend to default to classing it where it's less competitive. NASA, with its "more open rules," offers a better fit than some others, but still penalizes "non-production" (e.g., tube) chassis—which De Keijser finds ironic, arguing that "tube-chassis cars bring a more real race-car feel at a lower cost, for similar performance, than a stock-based car." Fortunately, in endurance racing, "even if you are not ideally classed, you can bring forward other attributes to be competitive. We've proven it. But it's a lot harder to do that in a 20-minute race."

When we asked De Keijser if he would consider prepping and maintaining customer-owned cars, he said that was "definitely a path forward," albeit one he has not yet taken. Growth could also come from "sponsorship or, alternatively, customers who are wealthier, but then you are working in a different tranche of the business. And it would be against the concept of racing for the masses."

De Keijser plans to import more Roadster Cup cars. With his father he owns an even dozen, but only three are presently garaged in California. The rest are in Belgium but bringing them over is "in the cards."

What De Keijser would "love to see" is "something similar to the VW Fun Cup in the United States—a single-make endurance series. You would need to have an association with the manufacturer, and I don't have that recognition," nor, he allowed, the necessary capital "to get something like that started. But I believe in the concept. If you look at the World Racing League, or Lucky Dog Racing, they are bringing endurance racing to the masses, but with all sorts of cars. The same concept with VW Fun Cup or Roadster Cup cars would be fantastic." PRI

PRINTED FOR SPEED

ADDITIVE MANUFACTURING IS PRESENTING FRESH, COST-EFFICIENT WAYS TO DEVELOP AND MANUFACTURE RACING COMPONENTS.

By Mike Magda | Photo courtesy of PWR

The mid-July summer heat of 2020 was unbearable for IndyCar drivers at the Road America double-header. The new Aeroscreen protection reduced cockpit air circulation, so teams, race officials, and engineers from vehicle designer Dallara collaborated on ways to introduce a fresh-air cooling duct. Time certainly wasn't a luxury as a pair of 250-mile races was scheduled for the following weekend in the sweltering Midwest.

"I knew several lead people at Dallara, and they reached out to us while I was at the Elkhart Lake race on Sunday," recalled Allen Kreemer of Stratasys, a manufacturer of polymer 3D printers based in Eden Prairie, Minnesota. "They said a driver cooling duct was needed. We were able to produce 24 of them in 48 hours and distribute them to all of the teams for the next race."

Dallara had a slight head start by working on the cooling duct with a couple of teams to develop the initial CAD files, including running computer simulation tests. Initial concerns included disturbance at the top of the screen and possible buffeting that might affect a driver's helmet. Teams were able to mount the ducts on top of the Aeroscreen using existing fastener locations.

"It actually gave the teams space for a logo or advertising for the in-car camera," noted Kreemer, who as a former IndyCar mechanic was helpful in finalizing the design in addition to managing the product's manufacturing.

IndyCar then made additional modifications to the Aeroscreen to manage cockpit temperature before the Indy 500 that August, eliminating the need for the temporary overhead scoop. However, the quick response facilitated by 3D printing demonstrated that additive manufacturing (AM) is arguably the most important disruptive manufacturing technology in motorsports since CNC machines.

3D PRINTING IN ACTION

Every major race team and aftermarket parts manufacturer relies on 3D printing in some manner for different facets of their operation. It may be used only for rapid prototyping, or with the use of advanced materials—including metals—end-use parts can be printed. Some teams even take 3D printers to the track. However, it's not just big-budget operations that take advantage of 3D printing.

A section of exhaust for a Porsche GT2 RS car is 3D printed at Pankl. Here, the employee is vacuuming up leftover metal powder that can then be recycled.

"I'm a small shop in terms of engine volume, but in terms of performance level we try to aim high," said Ben Strader of EFI University, Lake Havasu, Arizona, which has a dyno and Spintron for unique engine-development projects. "Even at our level, we are using 3D printing for many things."

Strader will request custom piston and rocker arm designs in plastic for mockup purposes before ordering the actual part. "We aren't big enough to justify the expense of owning the machines, but there are plenty of companies like Jesel, MAHLE, and others who offer these services to us," said Strader, who is working with BES Racing Engines on a 360ci LS engine with a goal of 1,100 horsepower naturally aspirated at well over 11,000 rpm. With an expected valve lift of 1.085-inch, valvetrain geometry is critical.

"We worked with Jesel on multiple iterations of rocker arm design by installing and mocking up the rockers on the actual engine and measuring the pushrod and rocker geometry. This led to several small modifications to the rocker arm adjuster angle to get the sweeps correct near the bottom and top of the lift curve," explained Strader.

Over at Elite Motorsports in Wynnewood, Oklahoma, 3D printing is also used for mockups. "3D printing allows us to achieve lighter weights, faster manufacturing, and cost saving for mock-up components that simply aren't possible with standard fabricating and machining practices," said Scott Woodruff.

"We use 3D printers to make parts for prototypes, test fitting, fixturing components, trim guides, and production retaining parts," concurred Jason Harding of Performance Design, Auburn Hills, Michigan. "We also outsource 3D printing for things outside of our build window or different types of 3D printing, which are used in development and dyno testing."

Race shops with 3D printers are producing a wide variety of parts that speed up operations, such as wiring or plumbing brackets, gauge housings, hood vents, brake ducts, switch panels, steering-wheel grips, and much more. In some situations, the design work is already available. The Internet offers generous sources of free standard triangle language (STL) files for brackets, spacers, tool holders, and other helpful products.

For more intense development work, there are numerous companies that will flesh out customer ideas, draw up the CAD files, and either print out prototypes in-house or source them out. HV3DWorks in Sewickley, Pennsylvania, was formed by Paul Vorbach to support a concours-level automotive restoration shop that often experienced difficulty locating rare or out-of-production parts. 3D scanning, CAD tools, and additive manufacturing allow Vorbach to reproduce

many of these scarce components. Sometimes he also helps racers.

"I did some injector stacks for a BMW engine," he said. "We took the owner's stock one, modified the design to make them longer, and then printed them. In that case, they were printed out of a nylon plastic."

Vorbach doesn't own the printers used to produce the parts he designs "because of all the different disciplines, and the machines are so darn expensive to do one-off parts," he explained. "But if you work with somebody who knows the various different disciplines, metals, and materials, you can do the design work and then print the parts. The advantage is you can print one, 10, or 20 parts and not lose your shirt."

Vorbach has seen the cost of metal printing come down in recent years, and there are more opportunities with metal printing—including titanium, stainless steel, and other alloys.

"I would say the metal AM is where we're seeing the biggest increases in technology. There's a lot in composites, too, of course," said Vorbach. "The real opportunity is in making parts lighter and cheaper. You can design to take advantage of honeycomb structures and things like that. Think of holes. In a CNC machine, putting in holes costs money. Once you design something with holes, in additive manufacturing you're not putting in any material, and it costs you less."

There are dramatic examples of high-end race teams and automotive companies that are 3D printing end-use metal parts. The $2 million Czinger 21C hypercar is mostly built with parts that were designed with AI software and produced at Divergent Technologies on huge 3D printers.

Critical engine parts such as pistons are also 3D printed. As long ago as 2017, Ferrari publicly discussed printing steel pistons for its F1 team. The alloy may be heavier than aluminum, but design changes can reduce the amount of metal needed. Porsche recently disclosed it was 3D printing pistons for a 911 GT2 RS engine. Not only did the company reduce the weight 10%, but it added cooling ducts that allows oil squirted from below to draw heat away from the crown. Such a feature would have been impossible with traditional forging and machining.

About 10 years ago, Pankl Racing Systems in Austria recognized the potential of AM and invested heavily in 3D metal printing. "We have 10 machines in different sizes, and we try to keep the machines printing the same metals," explained Christoph Wachmann. "When switching from titanium to steel or aluminum, you have to clean the machine thoroughly to avoid contamination. It's better to have more machines with separate materials. We have our own HIP [hot isostatic pressing] chamber to reduce porosity. And we have four or five choices of heat-treatment options."

On a recent project, Pankl helped a race team reduce engine weight by 3D printing a thin-wall aluminum oil tank that is attached directly to the cylinder block, a set of titanium fuel rails, and coolant fixtures. Pankl also 3D printed Inconel header flanges and exit tips for the exhaust system.

"We can do crankcases, it just depends on how big the engine is," said Wachmann. "We are also doing turbocharger housings that could be titanium, aluminum, or Inconel."

And remember those Aeroscreens for Indy cars mentioned in the beginning? Pankl 3D printed those from a titanium alloy. Five separate pieces are printed, then welded together.

Ben Strader of EFI University uses 3D-printed parts for mock-up purposes to check clearances and fitment before ordering the actual components. "We aren't big enough to justify the expense of owning the machines," he explained, but there are plenty of parts manufacturers that offer this service to his shop.

TECHNOLOGY ADVANCEMENTS

The potential to expand metal 3D printing involves a number of technology advancements, including the metals themselves. New alloys are being tested, and the feedstock powder itself is being produced with more consistency to improve the resolution of the finished product. The machines will get bigger with more lasers used to speed up the process, and the software will continue to improve. Finally, testing will validate material properties to satisfy structural demands.

"[Printed materials] are consistent and can be used in FEA," said Wachmann, noting that early iterations of the previously mentioned lightweight oil tank developed a crack from vibration. "This crack happened three or four times in exactly the same spot. The root cause was stress from vibrations that we didn't know about up front in the design stage. But the crack was always in the same spot, which for me is an example that the metal is consistent. Then we made a design iteration, and it stopped cracking."

Another motorsports supplier moving forward with 3D metal printing is PWR, which is based in Australia and has a plant in Indianapolis, Indiana. The company designed a heat exchanger concept and tried it on 20 different printers before choosing one from Velo3D.

"For us, machine capability with additive wasn't about just producing the fastest nor the cheapest part," explained Matthew Bryson. "Obviously, you've got to be cost-competitive with everything you do. But for us, it was about exploring the maximum potential of the technology to try to produce components that others couldn't."

One of the current strategies at PWR is to integrate 3D-printed pieces with existing conventionally manufactured components. "If you want to propose additive as a solution, it's not good enough to be, in and of itself, interesting or look cool. It genuinely needs to compete with traditional technologies," added Toby Maconachie. "While additive has advantages for thermal applications and the capability for internal complex geometries, it's also limited, such as the minimum feature size."

Key performance factors possessed by traditional thermal products include fine features, such as very thin tubes and tight

Trick Flow will 3D print sand cores to make aluminum prototypes during the design phase. Once the design is approved, then a traditional casting pattern can be machined for the foundry. Eventually, Trick Flow may use 3D-printed cores in production when print cycle times and costs are reduced.

tolerances. While current 3D printers can achieve mathematically complex surfaces, the resolution doesn't always meet the engineers' requirements.

"We can take both the high-performing cores that are traditionally manufactured and combine with fluid distribution systems that take advantage of complex geometries achieved through additive manufacturing," said Maconachie.

That means that complex housings can be designed to fit the lines of bodywork or wrap around a rollbar, then the different heat-exchanger cores can be integrated with welding or brazing.

"Heat exchangers are being redefined at the moment with hybrid and EV technology," added Bryson. "The increased power density of electronics and batteries now mean more power in smaller spaces. More complex cooling solutions are required to deal with those thermal challenges, and additive manufacturing gives us the ability to produce some quite intricate and freeform geometries to be able to solve some of those challenges."

On the other side of the industry, Stratasys focuses on polymer printing to meet the needs of racers. Often the printed part is used as a sacrificial core to manufacture the end-use piece.

"We can 3D print the inside shape of a brake duct out of a high-temperature soluble material, then wrap it with carbon fiber," said Kreemer. "You cure it in an autoclave, trim the ends, and finish as needed. Then you toss it in a support removal tank that comes with every FDM [fused deposition modeling] printer. That washes away the printed material in a matter of a few hours. That leaves a seamless, very durable, very complex shaped carbon-fiber duct."

More permanent carbon-fiber molds can be printed and used to lay up the composite materials many times. "You can literally bake and cure the carbon fiber in an oven, and the plastic tool does not deform whatsoever," said Kreemer, noting that Stratasys offers five different printer technologies using both thermoset and thermoplastic materials to serve a wide variety of customer needs. "The reason we have a diverse product line is there are some applications, some users that need a very high detail, smooth finish part for a concept model. Those same materials would not work as parts on race cars."

Race Winning Brands in Mentor, Ohio, the parent company of such race suppliers as JE Pistons, Dart Machinery, and Manley Performance, uses 3D plastic printing during the R&D phase of product development, including test-fitting applications.

"It is part of our day-to-day business with almost every brand in our portfolio," said Nick DiBlasi. "It saves us time, money, and allows us to visualize parts at our facilities that do not have manufacturing cells onsite. The best-use case is when making custom pistons or rods, and we need to get the largest skirt or beam width. It's very important to 3D print and test fit them in the engine and cycle them for clearance. That solves issues where a customer can't 3D model their block that has been modified, yet they need a part to fit perfectly. We also send them parts where they can grind and fit the part, then send it back and we model the clearance built in. This happens a lot with big beams on rods needed to clear blocks, or pistons with oil squirters."

MODELING WITH SAND

While 3D-printed prototype parts are useful in most mock-ups, some parts can't be tested in plastic, or a race shop wants to see how a cast-metal part will fit and perform. Hoosier Pattern in Decatur, Indiana, can 3D print sand cores for a foundry to cast the part. If changes are needed, an updated sand core is printed, and another test casting is made.

"We had a customer testing exhaust manifolds, so we printed up a couple of molds," recalled Todd Yoder. "They ran their samples and found out that the external geometry was what they wanted but wanted to tweak the internal geometry. We printed a couple more molds, and then they had their final parts for the race day. That was pretty easy to do with 3D-printed sand because there were no major changes to a core box. All we had to do is print the model based on what they needed."

Instead of making traditional hard tooling for casting, Hoosier can print molds in sand directly from a 3D CAD file. The process is quicker and less expensive while retaining the freedom to make changes.

"We can combine cores. So, if you have a complex internal assembly, many times we can print all the cores as one piece," added Yoder. "You're going to have higher accuracy. You don't have to worry about making all the individual pieces, filing them, and then assembling and gluing them together, then risking stacking up the tolerances."

Trick Flow Specialties in Tallmadge, Ohio, utilizes 3D-printed sand cores to produce prototype cylinder heads and intake manifolds for testing. "When designing a cylinder head or an intake manifold from scratch, the CAD modeling and flow simulation only gets you so far," said Josh Cook. "At some point early on, you need work with real metal parts."

Once testing and validation are complete, Trick Flow will use conventional tooling for production. Even though 3D printing the sand cores offers additional flexibility in the design, Trick Flow hasn't had a problem translating any printed designs into standard tooling.

"Our products are designed to be moldable or castable from the beginning of the design process. Our design engineers work with our pattern makers to think about draft angles, and can we make a tool effectively where our parting lines are going to be clean," continued Cook. "They're going

Here is the Velo3D Sapphire printer used by PWR. This laser powder bed fusion printer works by selectively welding 50-micron layers of metal powder to produce a final part that is then heat-treated and machined.

to be in a location on that part that is either aesthetically pleasing or isn't going to affect the performance."

With regards to 3D metal printing, the team at Trick Flow is looking forward to having that option. "I see great potential in that technology. There are still question marks that I have about the strength of 3D-printed materials. Strength is extremely critical in our application. So, the cost-effectiveness of that manufacturing process and the material properties are something that we would really need to dig into and understand," said Cook. "We haven't been convinced that the technology is ready for scale volume production—at least to be cost competitive with more traditional methods.

"The exciting thing is pushing those boundaries, and over time that technology becomes cost effective, and it can trickle down," Cook explained. "I believe that it will reach a point where it becomes more cost effective in mass production applications, and more consumers are going to be running 3D-printed product on their grassroots race cars." PRI

SOURCES

EFI University
efi101.com

Elite Motorsports
elitemotorsportsllc.com

Hoosier Pattern
hoosierpattern.com

HV3D Works
hv3dworks.com

Pankl
pankl.com

Performance Design
performancedesign.com

PWR
pwr.com.au

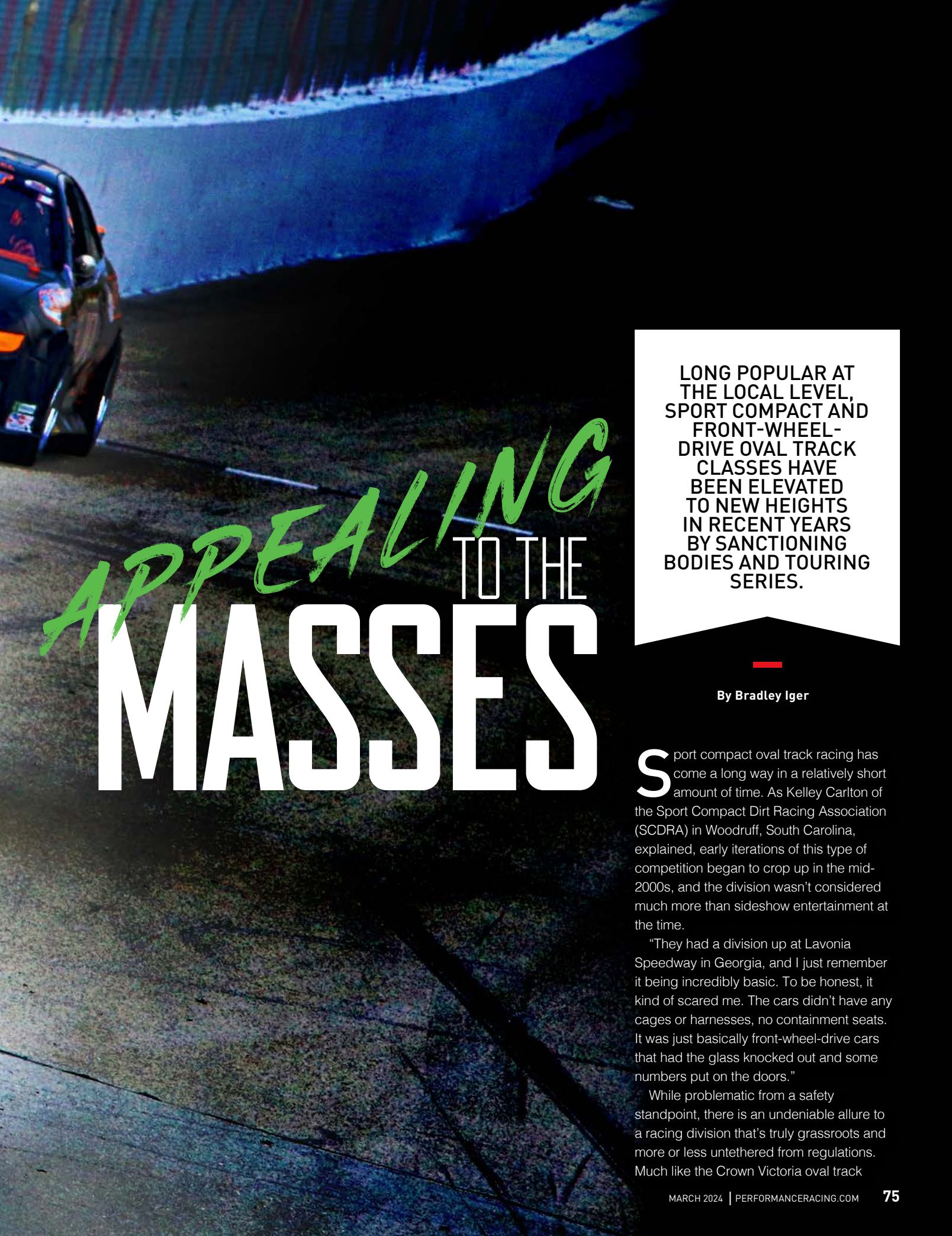
Race Winning Brands
racewinningbrands.com

Stratasys
stratasys.com

Trick Flow Specialties
trickflow.com

Velo3D
velo3d.com

Photo courtesy of Vores Compact Touring Series (VCTS)



APPEALING TO THE MASSES

LONG POPULAR AT THE LOCAL LEVEL, SPORT COMPACT AND FRONT-WHEEL-DRIVE OVAL TRACK CLASSES HAVE BEEN ELEVATED TO NEW HEIGHTS IN RECENT YEARS BY SANCTIONING BODIES AND TOURING SERIES.

By Bradley Iger

Sport compact oval track racing has come a long way in a relatively short amount of time. As Kelley Carlton of the Sport Compact Dirt Racing Association (SCDRA) in Woodruff, South Carolina, explained, early iterations of this type of competition began to crop up in the mid-2000s, and the division wasn't considered much more than sideshow entertainment at the time.

"They had a division up at Lavonia Speedway in Georgia, and I just remember it being incredibly basic. To be honest, it kind of scared me. The cars didn't have any cages or harnesses, no containment seats. It was just basically front-wheel-drive cars that had the glass knocked out and some numbers put on the doors."

While problematic from a safety standpoint, there is an undeniable allure to a racing division that's truly grassroots and more or less untethered from regulations. Much like the Crown Victoria oval track

Sport compact racers represent the youngest demographic of any of IMCA's divisions, said Brett Root. The average age is in the low 20s, while drivers in other divisions, like Late Models and sprint cars, are in their high 30s to low 40s.

racing that's becoming increasingly popular at tracks across the country, the fledgling division's back-to-basics approach attracted a younger pool of drivers who tended to be focused on having fun rather than using the division as a steppingstone into a professional racing career.

"Today it's the youngest demographic of any of our divisions," explained Brett Root of International Motor Contest Association (IMCA), based in Vinton, Iowa. Root noted that the average age of sport compact competitors running with the sanctioning body is in the low 20s, whereas ages in divisions such as Late Models and sprint cars are typically in the high 30s and low 40s. "At our national banquet late last year, we had more sport compact competitors there than any other division—and it's not our largest division. These folks are, in my estimation, racing for all the right reasons. This is about having fun competing more than anything else."

But while some series have focused on keeping their sport compact divisions close to original concept—albeit with more comprehensive safety mandates—others have taken a different route that includes a more open ruleset and larger purses. This, in turn, has effectively created two distinct schools of thought when it comes to sport compact and front-wheel-drive oval track racing. But one commonality remains intact: Interest is strong across the board.

DIVERGENT PATHS

Over the years, IMCA has largely stuck to its original concept for the division: naturally aspirated four-cylinder, front-wheel-drive cars that are very close to factory stock (aside from safety requirements like fuel cells and cages). That keeps expenses low, not only from the standpoint of the cost of the cars—which are often sourced locally by racers from salvage yards or online ads as street cars and maintained using consumables from local auto parts stores—but also in terms of what it takes to be competitive, as the restricted ruleset discourages racers from focusing on creating sophisticated setups to find competitive advantages. That tactic appears to be working.

"IN TERMS OF WHAT IT TAKES TO GET THE CAR ON TRACK AND BE COMPETITIVE, I DON'T THINK IT GETS ANY CHEAPER THAN THIS."

"In terms of what it takes to get the car on track and be competitive, I don't think it gets any cheaper than this," said Root. "The idea is to keep it basic and minimize the barrier to entry. That's a priority for us. That gets these folks racing. Our vision has always been, 'Okay, if you want racing wheels and tires, purpose-built engines, and things like that, there are other divisions in our organization that have that.' We see a lot of our compact racers migrate into other divisions over time, but the compact division itself has a strong following. We have almost a thousand racers in the division, and this past season we were at roughly 50 race tracks across the country. It's truly a national division."

Other sanctioning organizations have followed a different ethos, offering a less restricted ruleset when it comes to performance modifications in their front-wheel-drive classes. While it has resulted in more costly builds—and an older racer demographic as a result—it has also translated to events at bigger tracks, often with significantly larger payouts.

"We wanted to get these racers to some of the greatest short tracks in the country," said Dan Redmond of Vores Compact Touring Series (VCTS), Farmland, Indiana. "But you can't go to fast, high-banked tracks like Winchester Speedway and Salem Speedway with stock compacts—it's just not safe. So the goal was to put together cars that would keep the expense relatively low but would be safe to run at those types of facilities."

As a result, VCTS created what it refers to as Pro Compacts, which have more open engine rules than stock-style sport compact

divisions and allow for significant suspension and chassis upgrades, with weight minimums tied to engine displacement.

"Some term these as Outlaw Compacts," explained Redmond. "With stock compacts, you're still limited to things like steel wheels, stock suspensions, no camber, and things of that nature, whereas we allow all of that. But to level the playing field in Pro Compacts to maintain good competition and strong car counts at all our events, we require that everyone runs a one-inch air intake restrictor at all of our tracks, which we provide. That way, even if someone has a $10,000 engine in their car, they can only get so much power out of it with that much air going in. That helps the teams on smaller budgets stay competitive."

The use of a restrictor also allows competitors to build their cars around the rulesets of sport compact divisions that offer even more leeway in terms of modifications without having to make significant changes to be eligible to compete in both series.

"We've never been a 'knock the windows out and go racing' type of series," said Drew Jach of Midwest Dirt Compact Touring Series (MDCTS), Battle Creek, Michigan. "That's allowed for the series to evolve from a performance standpoint. We give our drivers the freedom to build up their motors. While they have to be from the manufacturer of the car—a Honda in a Honda, if you will—they can build and tune them the way they want to within reason. While it's not the Wild West when it comes to chassis and suspension stuff, they are allowed some freedom there as well."

"THIS IS ABOUT HAVING FUN COMPETING MORE THAN ANYTHING ELSE."

MDCTS requires the cars to run either a Hoosier 790 or a DOT-legal tire with a minimum treadwear rating of 200. Breaking with tradition, the series also allows four-cylinder-powered rear-wheel drive vehicles to compete in the same division, but Jach said that the front-wheel-drive vehicles are often the quicker machines.

VCTS has a division with more open engine rules than stock-style sport compact divisions and also allows significant chassis and suspension upgrades. "Some term these 'Outlaw Compacts,'" said Dan Redmond.

"Our ruleset is more open because we have strong relationships with other compact series throughout the country," said Drew Jach of MDCTS. "We try to keep our ruleset to where a driver can go between different series with minimal hassle."

"Our ruleset is more open because we have strong relationships with other compact series throughout the country," he told us. "At some of our races, we bring the East Coast, Midwest, and the Southern series together for these events. But we try to keep our ruleset to where a driver can go between different series with minimal hassle. It's not perfect—there's a lot of give and take that needs to happen in order to make it work."

"THERE'S ACTUALLY A WAITING LIST OF RACE TRACKS THAT WANT TO GET INVOLVED."

Although this less-restricted ruleset has made racing in these divisions more costly, Carlton said that it hasn't really had a negative impact on interest, and the events themselves have taken on a more professional look and feel as a result.

"Initially, one of the things that I felt was problematic was that sport compact just wasn't getting the same level of respect as other divisions," Carlton explained. "So we really encouraged the drivers to take some time to make their cars presentable and keep them maintained, and that really made a difference in the perception of the division. At this point, we could book 50 of these events a year if we wanted to. There's actually a waiting list of race tracks that want to get involved."

SCDRA tends to attract a different type of racer as compared to IMCA's sport compact division due not only to the costs required to build a competitive car, but also because of the prize money involved. "These cars can still be built for $10,000 or $12,000, and drivers can race for $5,000 at least once a month," Carlton noted. "Some events pay $12,000 to win, while the Winter Freeze race at Screven Motor Speedway pays $20,000 to win."

KEEPING PACE

Root said that while the IMCA's sport compact division is in a good place, some changes are inevitable in the years ahead.

"It's something we talk about regularly," Root explained. "Eventually we'll likely need to allow more makes and models into the division, which may usher in some six-cylinder cars as well. But it's hard to do something to these things without ruining what you've got, and without making everything that the racers currently own uncompetitive. We're always asking ourselves when the right time is for some of these changes, and that can be hard to pin down. But we have to stay aware of the fact that some of these vehicles and engines are getting scarcer simply by virtue of the fact that manufacturers' designs changed over the years. We currently don't allow engines with variable valve timing, for example, but non-VVT engines are getting harder to come by, so that could change down the line. If we allowed VVT, we'd probably implement some kind of restrictor rule rather than creating a separate division for those cars."

Redmond said that while VCTS generally prefers to keep a consistent ruleset, its

"THE IDEA IS TO KEEP IT BASIC AND MINIMIZE THE BARRIER TO ENTRY."

advisory board meets annually to take stock of the issues that need attention. "Something we often hear from drivers is that they love racing with some series, but they're changing the rules constantly, and that's costing them time and money. So it's important for us to get drivers' input before the rules come down; and once they do, we try extremely hard not to change anything during the season." One of the few changes that VCTS has implemented for the 2024 season is the use of aftermarket body panels on the cars rather than mandating OE components throughout.

"Originally, the rules stated that a car had to look more or less stock—a Honda Prelude had to look like a Honda Prelude from front to back," Redmond said. "But it was just getting incredibly difficult to find front bumpers that matched certain cars, and it had gotten to the point where racers were spending several hundred dollars just to get the right bumper from a junkyard. So we opened that up so they could go to Five Star or other suppliers and use a Camaro nose, or a Ford

A benefit to MDCTS competitors, according to Drew Jach, is drivers have the freedom to build up their motors. "While they have to be from the manufacturer of the car—a Honda in a Honda, if you will—they can build and tune them the way they want to within reason," he said.

"One of the things I felt was problematic was that sport compact just wasn't getting the same level of respect as other divisions," said SCDRA's Kelley Carlton. "So we encouraged the drivers to make their cars presentable and keep them maintained, and that really made a difference in the perception of the division."

nose, if they wanted to. Now we're extending that rule change to front fenders, rear fenders, and things like that, which helps from a cost standpoint. As availability of parts evolves over time, we want to do what's right to keep the racing affordable while also making sure that this is still something that the fans want to come and see."

SCDRA recently implemented a similar rule in its series as well. "We allow aftermarket nose pieces now, and we actually had some discussions with the folks at Five Star at the PRI Show about them potentially adding a product line specifically for these cars," said Carlton. "As of right now, most of the racers in our series are already using the MD3 stuff that they produce for Late Models, and they're just cutting it down to fit."

Jach pointed out that keeping costs in check helps these series maintain their lasting appeal. "Without some restraints, you run the risk of pricing the division out of affordability, which is part of what made it attractive to begin with," he said. "Some of the motor builds and chassis modifications are already pushing that concept. Suddenly what was a $20,000 car build is now $30,000 or $40,000."

MDCTS's current ruleset requires stock A and C pillars, along with a stock-appearing floor pan, but racers can use an aftermarket roof. Jach doubts it will go much further than that. "We're starting to see some tracks allowing tubular four-cylinder chassis, but I don't foresee us ever going that route. At a certain point, if it gets too expensive, the racers are just going to start looking at other divisions," he explained. PRI

SOURCES

International Motor Contest Association
imca.com

Midwest Dirt Compact Touring Series
midwestdirtracing.com

Sport Compact Dirt Racing Association
scdra.net

Vores Compact Touring Series
voresracing.com

PRI EDUCATION

2024 PRI SHOW CALL FOR SPEAKERS

EDUCATION FOR THE INDUSTRY, BY THE INDUSTRY

PRI is now accepting submissions for our seminar program at the 2024 Show in Indianapolis that reflects current trends, ideas, best practices and processes, new techniques and discoveries within the racing and performance industry.

To submit your 2024 **PRI Show Education** proposal online, visit: ***pri2024.com/speakers***

SUBMISSION DEADLINE: April 30, 2024

For more information, contact Meredith Kaplan Burns at MeredithB@performanceracing.com or 949-373-9216

TOPICS OF INTEREST

(but not limited to)

- Sponsorships
- Hiring & Employee Management
- Traditional & Digital Marketing
- Small Business Operations
- Youth Engagement
- Technical Content
- Content Creation
- Sales Strategies
- EV Performance
- Branding

SCAN QR CODE TO LEARN MORE

PRI SHOW

DECEMBER 12-14 | INDIANAPOLIS INDIANA

FUTURE SHOCK

SUSPENSION MANUFACTURERS DISCUSS NEW PRODUCTS, TRENDS, AND HOW SHOCK AND SPRING DEVELOPMENT ARE ALREADY MOVING INTO THE FUTURE.

By Drew Hardin

Racing drives innovation, the old saying goes. Except when it doesn't. In the interrelated interests of parity and cost control, some sanctioning bodies impose limits on the components allowed on a race car, despite existing technology that could make the cars faster or more reliable. Probably the most famous example of this was NASCAR's insistence on using carburetors long after the OEs phased them out in favor of fuel injection.

A similar situation is happening today with suspension systems. Electronically controlled active suspensions are becoming increasingly available in the transportation sector—and not just in the highest-end supercars—but a few sanctioning bodies allow them. "I think it was in the mid- to late-1990s when that was banned in Formula 1, and it's carried over," said Aaron Lambert of Penske Racing Shocks, Reading, Pennsylvania. "All the endurance-type sports car racing we're dealing with has banned any type of active suspension whatsoever."

"That's all illegal in the circle track world," added Ben Baker of AFCO Racing Products, Boonville, Indiana. There are other suspension limitations in dirt track racing, he added, pointing at the fallout from the rear suspension device engineered by Kevin Rumley and used by Jonathan Davenport on his dirt late model in 2015. "That basically allowed them to have a lot of extra droop in the car without a lot of steer," Baker explained. "They won a lot of races with it, but rules came out later on and outlawed the part. It narrowed the box to play in, which I'm not a huge fan of. The late model world was supposed to help innovate."

"ANY TIME WE TRY TO DEVELOP SHOCKS, YOU ALWAYS HAVE TO LOOK AT THE SANCTIONING BODIES, WHAT THEY DO OR DON'T ALLOW."

Yet despite sanctioning body rules—or more likely because of them—suspension manufacturers remain innovative, searching for the setup that will increase speed and shorten lap times. They're using the advantage of electronics where allowed, and thinking out of the box when it comes to conventional spring and shock systems.

"Any time we try to develop shocks, you always have to look at the sanctioning bodies, what they do or don't allow," Lambert said. "Some series are sort of status quo, so the rules kind of stay where they're at. There's only so much development you can do inside that box. But then there are other series that are a little bit looser with the rules and allow you to develop. Those trends typically carry over to other similar series."

DIRT TRACK DEVELOPMENT

Attendees at the 2023 PRI Show saw a number of new products introduced by Bilstein Motorsport, whose American headquarters is in Poway, California. "Bilstein Motorsport displayed at the PRI Show with a singular objective: differentiation from competitors," said Lexie Mead. "Our commitment to product development is centered upon dominance within our target market."


H/U

Among the latest products from QA1 are caster/camber plates for 1979–2014 Mustangs with the adjustment knob on the top of the plate. "You don't need to reach under or behind the wheel to make any adjustments," said Steve Smith.

To draw attention to the new gear, Bilstein hoisted a dirt late model car high over its booth. The car was fitted with Bilstein's new AS2-R shocks, several versions of which were on display below. They included the AS2-R ESCV, built with an aluminum cannister and three-way adjustability, with high- and low-speed compression, and shaft-based rebound adjustments. "Notably setting this build apart, this shock incorporates an internal hydraulic bump stop," said Mead. A Big Canister version of the AS2-R has, as its name suggests, a larger, 12-inch nitrogen canister, which allows lower nitrogen pressure with the increased nitrogen volume. There's a new AS2 FSR that's "uniquely designed to address the Northeast dirt modified market." The AS3, a successor to the AS2, was designed for applications "catering to a twin-tube feel" and offering "zero rod pressure," she said.

Not all the new Bilstein products were shocks; the company introduced a spring specific to the dirt late model market that's "crafted for corner-specific applications" and is tailored to be used with Bilstein's shocks.

Penske, too, has new shocks for this market, specifically designed for dirt modifieds. "Those cars used to have a steel shock rule, but now they're opening up a little bit, and we have shocks for them with aluminum Heim ends," Lambert said. That "doesn't sound like a big thing," he admitted, "but from a machining standpoint it makes it more cost effective for us to allow an aluminum body cap and aluminum eyelet." Some modified series are also accepting single-adjustable shocks, Lambert said, "so that customer base, which was always locked into a non-adjustable shock and had to have multiple shocks to do one little change, now can have an adjustable shaft that gives them the freedom to do a little bit more fine tuning." Penske is also adapting its NASCAR-style base valve into a steel shock, "which is going to work more efficiently and should feel better for the drivers and also should be better for tire wear."

Lambert believes the modified classes "are allowing a little bit of freedom where they used to be really clamped down." That may require "an uptick in spending" by the racers, "but the series are more competitive than they ever have been with car counts, the level of competition, and the payoffs. These races are paying out quite a bit more. So they're allowing the racers to get a little bit—I don't want to say free—but definitely allowing them to figure out some setups to be more competitive."

Rising costs are on Penske's radar. "We're always conscious of what the racer is willing to spend," Lambert added. "In the end, it has to make sense for the racers. I don't like spending anybody's money, so I want to make sure it's worth it in value." That's why when it can, Penske will "take parts already available on the shelf and adapt them to what a current customer might already

have." The new adapter for the NASCAR base valve, for example, allows racers "to take their existing shocks and bolt those pieces right on. They don't have to buy a whole new set of shocks."

"The whole thing is a challenge," acknowledged Steve Smith of QA1 Motorsports, Lakeville, Minnesota, "but we have to give the customer as much as we can, and still keep it within a price range that gives the part value." Value, and performance tailored to local track conditions, were behind QA1's introduction of the Dry Shock Six Pack last year.

"It's very hard for us to have somebody call and ask about valving they should run at a certain track that we've never been to," Smith explained. Plus, "racers will use different valvings on all four corners of a circle track car, and then it might sprinkle a little bit, and they want a whole different set of valvings." The Dry Shock Six Pack is just as it sounds: a box with six dry shocks and all the components needed to set up track- or condition-specific valving. QA1 initially offered the Dry Shock Six Packs for front shock applications only, but it now offers the shocks in different lengths for both front and rear shock setups. Because they come six to a box, "a dealer can order a Six Pack and outfit a car and then have two differently valved backup shocks," Smith said.

For AFCO, which also introduced new shocks at the PRI Show, the ideas for new products "come from the man in the field," Baker said. "I do a lot of hand-to-hand testing with teams, who will say, 'Hey, we need to be able to do this better.' Maybe it's a small modification to an existing part, or a whole new part altogether."

One trend that Baker is wary of is the increasing number of teams "getting involved with pulldown rigs. I've seen some interesting innovations there, but I've also seen over-engineering there. You move things and you find different loads and think, 'Oh, I've just got all kinds of traction.' Then you go to the race track, and it's totally the opposite. I do think pulldown rigs are a good thing to get the car through travel, check for bind, check for different things like that. But you're not necessarily going to move a bar here and there and find tons of traction just because you found load on a scale."

Bilstein introduced a number of new products for dirt track racers at the 2023 PRI Show, including three-way adjustable and Big Cannister versions of the AS2-R shocks and dirt late model-specific springs. To draw attention to the new offerings, the company suspended this dirt late model car over its booth.

DRAG RACE DEVELOPMENT

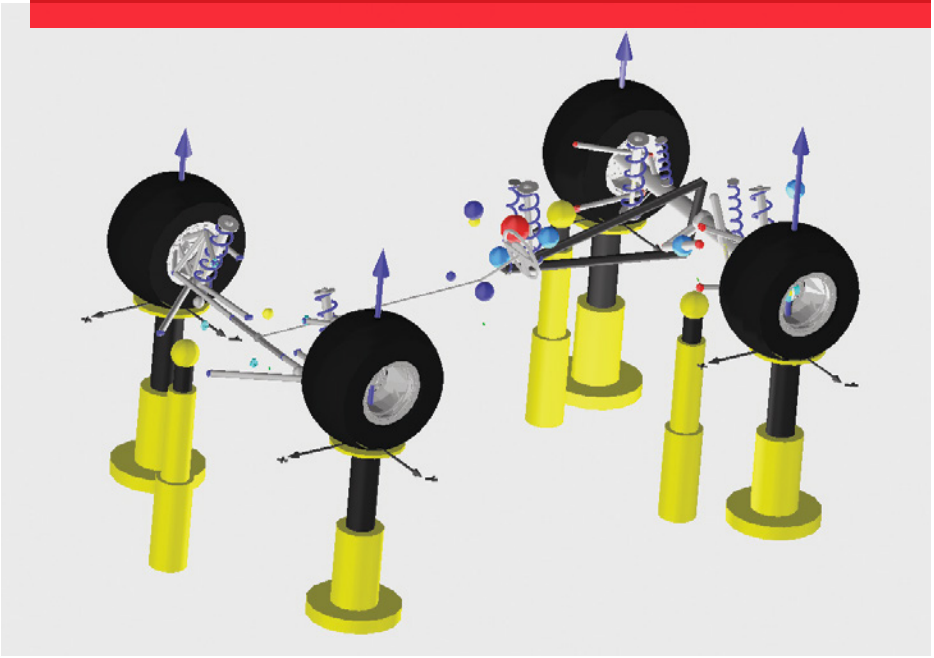
Baker said drag racing has recently become "a huge growing portion" of AFCO's business. "Last year it may have even surpassed the circle track side as far as shocks were concerned." AFCO has developed four-way adjustable shocks for drag cars, "and we've been working on different types of air shifters and controllers for them where you can change the valving in the shocks as you go down the track." Most of the technical innovation, he feels, is originating in the Pro Stock and Pro Mod classes, "because that's where most of the money's at, and then it trickles down all the way back into the bracket racing classes."

"The Pro Stock market is becoming heathier," Lambert agreed, "so we're constantly doing things there. Just small changes, as the engines become more efficient. The majority of those cars run some type of pneumatic adjustments that are all automatic based off the timers. So we are continuing to refine just how quickly the shocks can react to the track changes and to what the crew chiefs are looking at. Obviously, if you can get a little bit more mechanical grip to the rear tires, it makes a big difference."

The no prep side of drag racing "is becoming more and more interesting," he added, "and the shocks are becoming much more important. They have way more horsepower than they need, so whoever can figure out how to put more power to the ground usually does pretty well. We've been lucky to work with a few of those really good cars."

"Drag racing has not been big for us before, but it's becoming bigger now," noted Erik Ras of JRZ Suspension Engineering, which is based in the Netherlands but has two service centers in Illinois. "A customer like Underground Racing, which builds those drag race Lamborghini Huracáns with 2,000 horsepower, they order suspensions from us which they can fine-tune to the extreme to control the squat of the car." JRZ's 50-DA system allows adjustment of the compression and rebound "directly on the piston, and that makes it a very sensitive system for drag racing."

Penske Racing Shocks is collaborating with Claytex USA to build a dirt late model simulation package to help "develop new pieces and see what they do before you cut metal or bolt it on somebody's car," said Aaron Lambert. "In the end, it's more cost effective to do it that way."



ROAD RACING & AUTOCROSS DEVELOPMENT

Drag racing is just a part of the "very broad market" to where JRZ supplies suspension components, Ras said. Many of its customers are road racers, running their cars on courses as diverse as the Nürburgring and Pikes Peak. For them, JRZ offers products from two different lines, the RS line and the Motorsport line.

"All the shocks we manufacture are from the Motorsport production line," Ras explained, "so in reality, those choosing the RS line are getting a motorsport shock they can use for racing as well." The biggest difference between the two is their adjustability. Shocks in the Motorsport line offer "a slightly bigger adjustment range, and the steps in between are slightly smaller." Also, "all the compression and rebound adjustments in the Motorsport shocks are 100% independent from each other, while with the RS line, the compression adjustment is also independent, but when you adjust the rebound, there's a slight difference in compression damping as well."

At the 2023 PRI Show, QA1 debuted new struts for Mustangs and third-generation Camaros. "We had struts previously, and they worked fine," Smith said, "but there were some design changes we wanted to make." Now part of the Proma Star line, the bodies are made from aluminum, "so there's lots of weight savings." Also, the new struts mount inverted, "so the majority of the weight of the strut is hanging on the upper mount, which allows 4 or 5 pounds of sprung weight to be saved, which is going to lead to faster suspension reaction times," Smith said.

Along with the new struts, QA1 introduced new caster/camber plates for 1979–2014 Mustangs. "These are available in the single- and double-adjustable versions like we've always had," Smith said. "But the adjustment knob for the compression and rebound is on top of the caster/camber plate. You don't need to reach under or behind the wheel to make any adjustments."

There are also new Mustang control arms from QA1 in both race and street versions. They have forged ball-joint housings integrated into the weldment, "so now the ball-joint housing is part of the arm," Smith said. "You save weight without sacrificing any strength." Both street and race versions have low-friction ball joints. "The big difference between the two is that in the race arms we have a cam eccentric in the mount with a hex on it, so you can get additional caster and camber adjustments out of that."

"FIVE YEARS FROM NOW, ACTIVE SUSPENSION WILL BE ALLOWED BECAUSE BY THEN IT WILL BE COMMONLY USED IN ALL THE CARS."

Smith sees these new products as part of the evolution of race car parts. "Even if we have a product that does really well, we're always looking for ways to manufacture it in a different way or add more benefits for the customers." The inspiration for these changes comes from QA1 customers, he said. "We get weekly updates from our phone calls, and we get a lot of feedback from our customers. We take what we're hearing and turn it into the product development side, and then we make decisions from there."

Aldan American of Signal Hill, California, has "predominantly a hot rod and cruise night kind of customer base," said Gary Nelson, but it does offer coilover systems for "the lower end drag race classes, the guys working on their cars in their garage. Our clientele is running the index classes, and they want something that's consistent, that they can adjust for track conditions in order to run their ET."

To serve those and its other customers, Aldan has expanded its offering of double-adjustable shocks. "And we've been doing a lot more direct-fit applications for a cruise-night car that goes autocrossing occasionally," Nelson added. "With a set of double-adjustable coilovers you can have something pleasant to go to a cruise night, and with some twists of a couple knobs you can have a lot of fun on the autocross."

Aldan American's drag racing coilover systems are commonly used in index classes for their consistency and ability to be adjusted for track conditions to run specified ETs. Aldan has also released products for cruise-night cars that occasionally autocross.

The direct-fit applications, which drop into the stock suspension locations, started with Vipers and C5/C6 Corvettes and have expanded into Mustangs, Camaros, Chevelles, and other American muscle and performance cars.

THE ACTIVE SUSPENSION QUESTION

For those classes that allow it, JRZ has developed an active suspension system valve that is "extremely fast and extremely accurate," Ras said. "There's no hysteresis, which means when you take current away from the valve, there's no remnant magnetism left in the coil. So the valve always goes to exactly the position you want the valve to go."

Ras has racing customers using the active system on Pikes Peak to help mitigate the changing road conditions on the mountain. "The road surface can be completely different from the lower section to the upper section, so you want to have more control. With the active system, you can control it on the fly, and it will adjust to what it needs to do."

Ras believes some time in the future, perhaps "five years from now, active suspension will be allowed because by then it will be commonly used in all the cars." Resistance to it from the racing community isn't a matter of cost, he believes, but because "it's mostly unknown."

Lambert sees two reasons to keep active suspension systems out of racing. "Being able to police that and enforce that gets a lot more difficult when you're dealing with electronics." He also sees cost as a barrier. "When it comes to racing, the low dollar [active suspension systems] never work as well as they need to. You can really spend a lot of money on very expensive valves and things like that to make an active suspension react the way you want it to."

MINING DATA

At the top tiers of racing, gathering suspension data through race simulation has become a necessity, Lambert said, "because they typically limit the amount of testing you can do." He sees the practice trickling down into other race disciplines, and Penske is moving that way when it comes to its dirt late model racing customers. He acknowledged that testing for a dirt late model team isn't as limited as in other series, "but the testing side has become so costly when you're putting laps on your motors and on your tires and burning fuel."

Penske is working with Claytex USA of Cornelius, North Carolina, in building a dirt late model simulation package. "We purchased our own dirt late model house car that we have on a pulldown rig in our shop in North Carolina. We've had that entire car scanned and put into our sim package.

"It's quite an undertaking," he added. "You have to have your chassis scanned and put in there, you have all your moving pieces put in there, we have the shocks themselves modeled, the spring curves modeled, you have to do the tires. But once you have it and you start correlating it to the real world, and you can start making your simulation match

what you see on the race track, it really starts to streamline the process of developing new pieces and seeing what they do before you cut metal or bolt it on somebody's car or ask a team to waste laps on tires and engines to see what it feels like."

This would be a good time to clarify an important point. Nate Horn of Claytex said, "In the vehicle simulation world, a simulator is considered something that has a steering wheel and pedals. A desktop simulation, what we are doing here, is something that is run by the click of a mouse on a computer. The math model that is run in the desktop simulation (when properly implemented) is what runs in 'real time' on a powerful computer that is hooked up to a driving simulator."

"You'll be seeing a lot more about this in the next two to three years in these lower forms of racing," Lambert predicted, "because in the end, it's more cost effective to do it that way." While Penske's customers are going to benefit from what's learned by the company's simulations, "ultimately if you really want to refine it and make it your own, you have to scan your own chassis, because everything's a little bit different. But right now, just in terms of general tuning and trends, we're going to learn more because now we can run a simulated lap in a matter of seconds compared to waiting to go to the race track and trying different things." PRI

SOURCES

AFCO Racing Products
afcoracing.com

Aldan American
aldanamerican.com

Bilstein Motorsport
bilstein.com/en-us/

Claytex USA
claytex.com

JRZ Suspension Engineering
jrzsuspension.com

Penske Racing Shocks
penskeshocks.com

QA1
qa1.net

GAME CHANGER

HAVING THE RIGHT PARTS CLEANING EQUIPMENT AND USING IT CORRECTLY "WILL CHANGE YOUR LIFE," SAID AN EXPERT IN THE INDUSTRY. HE AND OTHERS SHARE TIPS FOR GETTING THE BEST RESULTS.

By Drew Hardin

To Perry Crabb, who has worked at AXE Equipment of Council Grove, Kansas, since 1985, the importance of clean parts is obvious. "Everything starts with the cleaning department." No shop is going to "put a filthy block in their honing cabinets, or on their boring table, either. You don't start anywhere until you get it clean."

Mark Haworth of Temco Parts Washers in Edmond, Oklahoma, agreed. "Everybody in the automotive world deals with cleaning parts. I don't care if it's a race car or an everyday driver, if you take something off, you're going to clean it before you put it back on or rebuild it."

That being the case, these sources and others we spoke to in the parts cleaning industry remain surprised at how many automotive-related businesses don't have the proper parts cleaning equipment. Or, if they have it, don't use it for maximum effectiveness.

Before he worked at UltraSonic LLC in Amelia, Ohio, Jason Shaw used to "spend hours busting my knuckles in a mineral spirits parts tank scrubbing nuts, bolts, parts, valvetrain, all that stuff," he said. "When I got here and saw what these machines can do, I was kicking myself wondering, 'Why have I not seen this before?' Once you see how much time and effort it will save you, it can be an absolute game changer."

But, Shaw added, "it's not magic. It's science." To get the most out of a parts cleaner, whether it's an ultrasonic machine, a blast cabinet, a water-based parts washer, or other piece of equipment, there are processes and formulas to be followed.

MULTIPLE STEPS

Depending on the parts being cleaned, the job may require several steps using multiple types of equipment.

Mark Oryszczak of Giant Finishing in Addison, Illinois, pointed out that a shop doing remanufacturing will have parts "with heavy greases and oils on them, so they may have to go into a parts washer first, and then they'll need to scrub the parts afterward. Then there are times, like to get into little nooks and crannies, they'll want to do that in a dry blast cabinet. But you can't put wet, greasy, oily parts in a dry blast cabinet, so that's when you have to use something like a slurry cabinet."

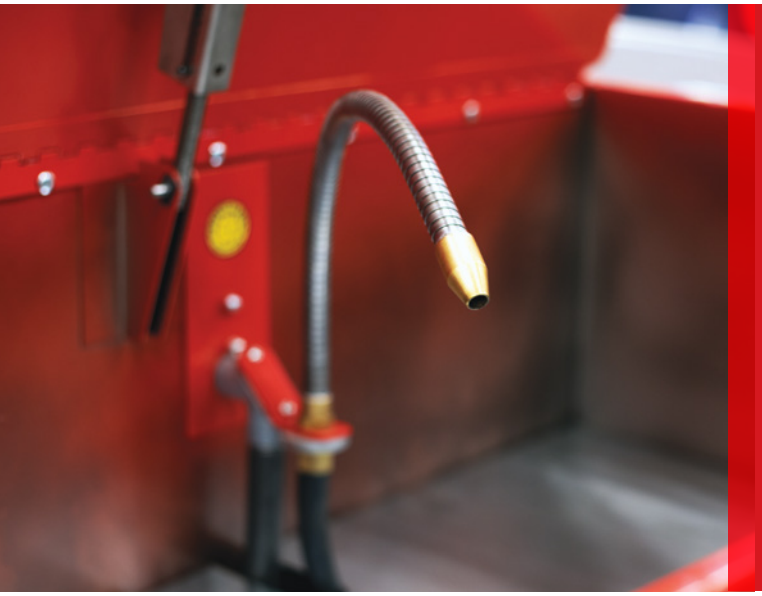
"A good cleaning system combines different kinds of equipment working together, which can dramatically reduce the amount of time needed for cleaning," Shaw said. "For example, instead of putting something in a jet wash or spray cabinet for a half hour or an hour, put it in there for five or 10 minutes just to knock off the heavy, thick stuff. Then put that part into an ultrasonic cleaner for precision cleaning. It will get down into the angles, the blind holes, the places you can't see or touch. If at that point you're going to machining, you may need a little media blasting, but the ultrasonic machine may have eliminated the need for that, or at least reduced the media blasting time."

TIME, TEMPERATURE, DETERGENT

While different kinds of water-based cleaning equipment may not function the same way, they all have one thing in common: To get the best results, "it's all about time, temperature, and concentration, and the concentration is the detergent," Haworth said.

Temco's parts washers don't use spray nozzles, "so for us it's about gallons per minute and pressure. We want to flood the part with as much hot, concentrated detergent as we can to get it as clean as we can." The ideal water temperature is "around 180 degrees or hotter," Haworth said.

"You've got to have hot water," Crabb agreed. "We set parameters where you can't get any colder than 140 degrees, because with anything under 140 you're just wasting your time." However, "you can't go over 200, because above 200 water starts to boil, and the pumps don't want to pick up the water." Cast iron parts, he said, "respond well at a higher temperature, like 180 or 190."



When using parts cleaning equipment with nozzles, like this Safety-Kleen cabinet, it's important to have a good filtration system, one of our sources said. That will prevent debris clogging the nozzles, which will keep the equipment running efficiently.

Because AXE cleaning equipment does use nozzles, Crabb added a good pipe system and filtration to his list of must-haves. "Without the filtration you risk plugging your nozzles," he said. "If you're running this big, 10-horsepower pump with 20 nozzles, and 11 of them are plugged, you're running all that energy and not getting anywhere."

One more ingredient Crabb included was a good drive system for the parts turntable. "Our turntables are very slow, like two-and-a-half times per minute, because we have to have contact time coming out of those nozzles."

Time is a critical factor when using an ultrasonic machine, Shaw said. "Start with short cycle times, especially if you're dealing with aluminum. If you leave it in there too long, it can etch or discolor the part. You will want to do some testing, as there's a bit of a learning curve with this equipment. All too often people put parts in the tank and crank on the time for, say, 15 minutes, when the part was actually done in 3 to 5 minutes."

The "science" aspect of parts cleaning figures most prominently when it comes to detergents.

"Monitoring the pH of your water is important to every parts washer," Haworth said. "It's all about monitoring the pH of the detergent and mixing it correctly." Most detergents come with a Safety Data Sheet (SDS) that indicates what the pH of that detergent is when properly mixed. Ideally, "you want a high pH, but not above 12," he said. "You're getting more alkaline as you go higher on the pH scale, and if you go above 12, you can damage the cabinet if it's a steel cabinet. We've seen people who have had a machine for a few years, and they complain about it rusting out and things falling apart. It's mostly because they're using a chemical in their machine that has a high pH. It may clean the part better, but it's also damaging the cabinet."

Rust, though, can form for another reason.

"A lot of people who buy these spray washers think, 'All I'm doing is final wash. I'm washing completely clean blocks. So I'm just going to put some Simple Green in my spray washer. It smells good,'" Crabb said. "But that machine will rust up within a week. If you don't run a detergent with a built-in rust inhibitor, you're going to have problems."

The hardness of the water used in the machine—the water's calcium content—can also affect the detergent, Haworth said. "You can't achieve the pH you want if the water is really hard. If you can't get your pH up above 11 with a detergent that says its pH is above 11, then you probably have very hard water." There are ways to treat hard water, he said, "and none of them is extremely expensive. You don't have to buy some elaborate water softening system. There are chemicals you can add to your tank to reduce the hard water and its impact on the detergent. The detergent will last longer, the pH will stay higher, and the parts will get cleaner." To determine the pH in their washers, "people can go to Amazon and get a digital pH tester for about $12."

CAST IRON VS. ALUMINUM

Another factor in choosing a detergent is the makeup of the parts to be washed.

"What are they going to be cleaning, cast iron or aluminum?" asked Crabb. "If they tell me strictly cast iron, they should ask for a chemical with a high concentrate of sodium hydroxide, meaning it's caustic. That will eat at that paint and that baked-on sludge on those blocks. But then they can't put aluminum in it."

"There are products on the market that do very well with steel, but most of those products can discolor aluminum," Haworth said. "They will turn an aluminum part dark gray. There are specific chemicals that you want to use for aluminum. Those have a different chemistry. They can create the same pH, but they don't have such a harsh effect on aluminum."

He acknowledged that, for shops that do both cast iron and aluminum in a single parts washer, "it doesn't make sense to drain out and waste all that detergent. You can get by with running shorter cycles using an all-purpose detergent with aluminum. It can minimize the impact of the discoloration. But if you run it for a long wash cycle, you're going to get discoloration. It's a challenge when you're trying to use two different base materials in a parts washer."

A good drive system is necessary for the parts turntable, according to a source from AXE Equipment. Not only does it need to be capable of handling the jobs coming into the shop—like this Caterpillar diesel block—but it also has to turn slowly enough so the part has maximum contact with the cleaning solution.

In an ideal world, Crabb said, a busy shop would have two machines, one dedicated to cast iron, the other to aluminum. For those shops that can't afford that, he recommended using aluminum cleaner for both cast and aluminum parts. "That aluminum cleaner with high heat and good pressure will clean probably 70%, but it's not going to cut any carbon, not going to take off any paint, not going to really cut that heavy sludge." In those instances, "they should do a little bit of hand massaging before they put the part in there, scraping off some of that big stuff."

To help in these situations, AXE manufactures washers "with a built-in hot tank in the front," Crabb said. "You can soak a block or a pair of heads in our hot tank while you're spray washing up in the top."

These same kinds of detergent choices apply to ultrasonic washers as well, Shaw said. "We offer several different detergents depending on the kinds of parts they're cleaning. Anybody who's dealing with billet and racing parts exclusively should use our Ultra 3. It's definitely the safest for that kind of thing. If you're cleaning diesel reman and dealing with cast iron, ferrous metals, and old school parts coming out of a junkyard, Ultra 1 is the most aggressive. Ultra 2 is our mid-grade, for people cleaning a variety of parts."

"There's always new chemistry and new media coming out," Oryszczak said. "It uses our same style of equipment, but there are options that make using that equipment more user-friendly." One example he cited was a chemical mixing system "that automatically siphons the correct mix of chemistry and water. The best analogy I can think of is this: Do you want to be the fifth person in line for a bath with the same water after me and four other guys? Just recirculating the water? Or would you rather take a shower where you're not recirculating the water? Where are you going feel clean? Same with your parts."

On the subject of recirculating cleaning water, depending on how busy the shop is, cleaning solutions should be changed about four times a year, Crabb said. "But I'll bet many rebuilders only do it twice a year. Nobody wants to clean these things. They're filthy." What happens more often is the water that naturally evaporates due to the high temperatures is replenished. "When they lose 10 gallons, they'll add 10 gallons and more chemical.

"But there's risk to that," he continued.

"There's a bit of a learning curve with this equipment," reported a source from UltraSonic LLC. Users can often shorten their cycle times to a fraction of what they've been accustomed to with other cleaning equipment. Product walk-arounds at the PRI Show help introduce new customers to how an ultrasonic machine works.

"When they go home on the weekend, and that water gets cold, all that stuff gels together, and it falls on the bottom. It's not coming back up until you take it out. If they're not mindful, they'll get a big sludge buildup down there, which is going to insulate the heater. Now it's not going to heat up right." Fortunately, there are service agencies, including Safety-Kleen, which will "come in and suck that sludge and the water out of there and take it away for you."

ENVIRONMENTAL IMPACT

Mentioning washer water removal brings up another aspect of parts washer ownership that shops need to consider: the environmental impact of the machine.

"When you buy these water-based cleaning products like ours, there's some responsibility that comes with it," Crabb said. "What are you going to do with all the mud that's collected down in the bottom? There's lead content in all the stuff we've washed out of the engine block. If you've stored it out in the backyard, it's all going to leach down into the ground, and the EPA doesn't like that. It's something to be mindful of when you're buying these things, even ultrasonics."

Having an agency like Safety-Kleen remove the wastewater and sludge is a good first step, Crabb said. AXE also manufactures a Rinse Booth that retains and recycles the rinse water inside the booth's reservoir. "It's a closed-loop system. We call it 'No drain, no EPA pain.' We take them to the PRI Show every year, and we sell them all the time."

Crabb also suggested that shops add a line for waste disposal fees in their invoices, much like tire stores and oil-change stations do, to offset the costs involved with properly disposing of the water. "Otherwise, they're cheating themselves. And I wouldn't bury it in the price of the product. I'd put it on a separate line just like they do with tires."

RETURN ON INVESTMENT

"You don't make money cleaning parts," Haworth admitted. "It's a process, but it's not a profitable part of the process. It's something you have to do. But I've done so many ROIs, and there has never been a case where a parts washer didn't pay for itself in less than a year. Do the math: You pay a kid minimum wage to stand out there with a pressure washer. Or you waste the time of a technician who's bent over a wash tank trying to clean a part. Within a year, a $10,000 parts washer pays for itself. You can't hire a person and pay an annual wage of $10,000. Well, not in this country. It just pays for itself. You put a part in it, you turn it on, you walk away, you come back, and your part's clean."

Mark Haworth of Temco Parts Washers said in most cases a parts washer will pay for itself within a year. "You put a part in it, you turn it on, you walk away, you come back, and your part's clean."

"An UltraSonic machine never takes a break. It doesn't take a vacation. You get the same precision cleaning job every single time," Shaw said. "Even a tabletop cleaner has merit and value. Then, depending on what you're doing, you can move up to a larger unit. Now, instead of spending half your day cleaning heads, it's doing that for you, and you're on to assembly or machining. You're increasing your volume, and it will increase your profit. It will change your life."

Haworth called a parts washer purchase a "100% get what you pay for" situation. "When you're making an investment in a parts washer, a few thousand dollars can make a difference between a two-year machine or a 20-year machine. I have machines still running, that run every day, which were built in the 1990s. You want to make a solid purchase, a one-time purchase if possible, and have a machine that will be around a long time.

"I rarely replace the machine," he added. "If I sell a repeat to a customer, it's because they've added on, and they need more machines. It's not because their machine

> "IF YOU TAKE CARE OF THEM, THESE THINGS WILL LAST YOU 25 TO 30 YEARS."

wore out or fell apart. They've grown, and they need another machine."

FINAL THOUGHTS

"How can someone get the best results from their parts washer? Pick up the phone and call a metals finishing expert," said Oryszczak. "There's a lot to be gained by talking to an expert. There are minor details that you may divulge in just general conversation that could be key to helping figure out what you're doing. We can help figure out if they need equipment. Do they just need to tweak their process? Are they using actual chemistry, or are they using Dawn dish soap? Seriously, you can't make some of this stuff up. Do they need heat? Are they doing this in a parts washer? Are they doing this in a vibratory, a tumble cleaner? Are they doing this in a blast cabinet, a slurry blast cabinet, centrifugal barrel, ultrasonic cleaner? There are so many methods to do this."

Giant Finishing will even accept sample parts, "and we'll process them free of charge" to help solve a cleaning problem, Oryszczak said.

"These machines are a lot like air compressors, in that people put them up, and when they stop working, that's when they take care of them," Crabb said. "Nobody cares about them until they're broken. The performance people are better than most, but the engine rebuilding businesses in general don't take care of them very well. But this is our 40th year. We rolled out the first machine in July of 1984. And we still have machines out there. If you take care of them, these things will last you 25 to 30 years. No problem at all." PRI

SOURCES

AXE Equipment
axeequipment.com

Giant Finishing
giantfinishing.com

Safety-Kleen
safety-kleen.com

Temco Parts Washers
washparts.com

UltraSonic LLC
ultrasonicllc.com

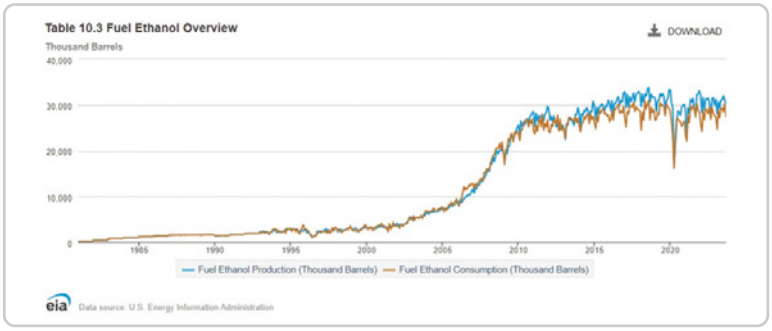
PRI TECH

ALTERNATIVE FUELS IN MOTORSPORTS

The next generation of fuel is upon us with low carbon intensity versions of ethanol and renewable diesel leading the way in advances.

By Zachary Santner

The term "alternative fuels" has been used in headlines for the past few decades as the world searches for a new method of producing fuels to power our lives. Crude oil provides an economical solution for transportation, but it brings carbon molecules from underground and releases them into the environment. Many fuel providers and race series, as well as government agencies, are focusing on the challenge of developing a technology that powers our vehicles without altering the composition of our planet's atmosphere. This is why almost every recent headline regarding racing fuel has been focused on communicating a sustainable message.



Timeline of ethanol introduction to US gasoline market.

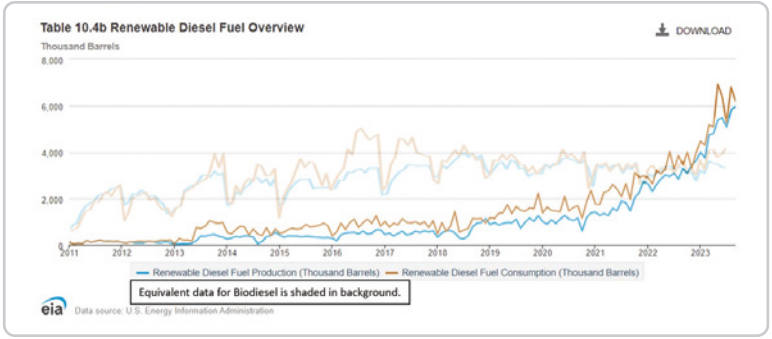
The fact that the racing industry is included in the search for sustainable energy is a compliment to the unrivaled creativity inherent to the sport. This creativity spawns from intense competition and the everlasting spirit of racers who push boundaries and drive technology forward. This article will cover the history of alternative fuels used in the US as well as define the next generation of diesel and ethanol products becoming more available for racing and transportation vehicles.

ALTERNATIVES TO TRADITION

The history of alternative chemicals that have been tested in internal combustion engines focuses on racing fuels and the wide adoption of ethanol in gasoline and biodiesel in diesel. Alcohols, ethers, esters (biodiesel), and nitromethane could all be considered alternative fuels compared to traditional gasoline and diesel. These alternative products have been around for decades in racing and are even favored by many different categories. While these alternative fuels meet the demands of racing, they do not address the challenges of the US transportation sector or allow for a sustainable environment.

The addition of ethanol and biodiesel have helped shift the fuel source away from solely relying on subsurface carbon. Additionally, these biofuels recycle some of the carbon that is currently in the atmosphere. As seen in the graph at top left, from 2000 to 2010, ethanol production ramped up and became widely utilized at up to 10% in gasoline.

Both the top and bottom graphs show how ethanol and biodiesel production have plateaued, indicating stalled progress in reducing carbon emissions from fuels. Conversely, renewable diesel production has doubled year over year for three years running. When deciding which direction the industry will shift, the key is not only the chemical compounds themselves, but how they are produced.



Timeline of biodiesel (shaded) and renewable diesel introduction to the US market.

RENEWABLE DIESEL

How is renewable diesel different from biodiesel? Renewable diesel is made from vegetable or animal fats that are heavily refined and purified into a very narrow cut of synthetic diesel that can be a drop-in replacement at 99% usage in fuels.

Many refiners have fully switched from crude oil processing to animal/vegetable fat processing so they can support markets where low carbon emissions are valued.

Renewable diesel is being favored over biodiesel because it can be used as a drop-in replacement for diesel without the gelling troubles that plague biodiesel. Renewable diesel also has a high "cetane rating," which gives the fuel a shorter ignition delay from when the fuel is injected to when it combusts and offers better tuning for performance applications. The cetane rating of renewable diesel is in the 70–75 range, much higher than the EPA minimum of 40 for crude diesel. This alternative fuel is attractive because heavy industries (aviation, trucking, shipping) are less likely to be electrified in the near future.

LOW CARBON INTENSITY ETHANOL

Low carbon intensity ethanol is an example of how changing the production method of a particular chemical can also reduce the impact on the environment. Also known as "second generation" or "cellulosic ethanol," low carbon intensity ethanol has the same fuel specification as traditional ethanol; therefore no changes are needed for current vehicles. Low carbon intensity ethanol is made from breaking down cellulose from corn stalks and leaves into sugars that can be fermented into ethanol. Using the parts of the corn that would otherwise be burned or sent to a landfill helps reduce the carbon intensity of this ethanol. It will deliver the same performance benefits as typical corn starch ethanol when used in fuels like E85. Starting in 2024, Sunoco has adopted low carbon intensity ethanol in the manufacturing of its race fuels such as E85-R.

The next generation of fuel is upon us with low carbon intensity versions of ethanol and renewable diesel becoming available in certain markets. When combusted, they still have similar emissions to their first-generation counterparts; however, the way they are produced has a lower impact on the environment. Each pathway to produce the fuels is different due to variables in gathering feedstocks, processing methods, and transportation of finished fuels. These products can reach up to 65% reduction in life-cycle carbon emissions when compared to gasoline or diesel. While these fuels are not perfect, they are available currently, and many companies and municipalities are selecting them. This has led to a demand for low carbon fuels that outpaces the production capacity in the US and signals a growing alternative to electric vehicles.

Sunoco E85-R is always 85% volume ethanol and is blended from low carbon intensity ethanol.

Racing continues to offer a canvas for testing new ideas that reward performance, power, and reliability. New fuels are always welcome to be tested, as the next generation of low carbon fuels promises a more sustainable product alongside performance readiness. PRI

Zachary Santner is the Manager of Product Engineering for Sunoco Performance Products, providing high octane specialty fuels to the largest racing series as well as the enthusiast market. Mr. Santner is a resource to the automotive aftermarket and holds a degree in chemical engineering and a master's degree in business administration.

SOURCES

Alternative Fuels Data Center
afdc.energy.gov/fuels/renewable_diesel.html

U.S. Energy Information Administration
eia.gov/totalenergy/data/browser/index.php?tbl=T10.04B#/?f=M

ADVOCACY CORNER

Tracking legal, legislative, and regulatory developments impacting the racing and performance industry.

Edited by Jack Haworth

PRI's Washington, DC-based legal and advocacy teams work continuously to protect and support motorsports venues, sanctioning bodies, and businesses around the nation. We are tracking several initiatives this month, including a pro-business tax bill in the US Congress and multiple state legislatures introducing bills aimed at fighting ZEV (zero-emission vehicle) mandates and supporting consumer freedom.

ATTEND THE SEMA & PRI WASHINGTON RALLY

Don't miss out on the opportunity to attend the SEMA & PRI Washington Rally, taking place in Washington, DC, on May 8–9, 2024. The Washington Rally provides an opportunity for SEMA and PRI member companies to come together and advocate on behalf of the specialty automotive aftermarket and motorsports parts industries with members of Congress.

By attending the Washington Rally, you will have the opportunity to meet with your members of Congress and their staff, discuss critical issues, and advocate for policies that will benefit our industry. Your participation will help ensure that our industry's concerns are heard and that we can continue to innovate and grow.

Whether it's protecting the right to repair and modify vehicles with advanced technology, combating vehicle technology mandates that limit consumer choice, or protecting motorized access to federal government lands, there are many issues facing SEMA and PRI members in the nation's capital. With the 2024 presidential election heating up and the balance of power in both the House and Senate up for grabs, it's more important than ever for SEMA and PRI members to come to Washington, DC, to advocate for the industry!

To register for the Washington Rally or for more information, please visit **sema.org/washington-rally** or contact Kayla Mitchell at **kaylam@sema.org**.

SEMA and PRI have a limited number of rooms available at the Royal Sonesta Washington, DC Capitol Hill for $409 per night plus tax. A link to book a room will be provided upon completing the registration form. Please encourage SEMA and PRI members to RSVP for the Rally and book their rooms ASAP!

2024 Washington Rally events:

Wednesday, May 8, 2024

5:30 pm–7:00 pm: SEMA-PRI PAC Reception, Royal Sonesta Capitol Hill, Sapphire Room & Terrace – Penthouse level

*A PAC contribution is required to attend in the suggested amount of $250 per individual. If you have already contributed to the SEMA and PRI PAC in 2024, this event may be complimentary as a part of your PAC Membership Benefits. Please contact PAC Manager Alicia Steger at **alicias@sema.org** if you have any questions.

7:00 pm–9:00 pm: Washington Rally Congressional Dinner, Royal Sonesta Capitol Hill, Crown Ballroom – Penthouse level

Thursday, May 9, 2024

7:00 am–8:30 am: Breakfast and Welcome Briefing, Royal Sonesta Capitol Hill, Crown Ballroom – Penthouse level

9:00 am–12:00 pm: Meetings with Congressional Representatives, House and Senate Office Buildings

9:00 am–3:00 pm: Cars at the Capitol Event, Southwest side of the US Capitol on Maryland Avenue (across from the Botanical Garden)

12:00 pm–1:30 pm: Congressional Luncheon, Capitol Hill Club, Eisenhower Room

2:00 pm–5:00 pm: Meetings with Congressional Representatives, House and Senate Office Buildings

CALIFORNIA INTRODUCES BILL TO MANDATE SPEED LIMITERS

California has introduced SEMA- and PRI-opposed legislation to require new vehicles to be equipped with speed governors starting in model year 2027. Speed governors, also known as intelligent speed limiters, use GPS technology to limit vehicle speed. If enacted into law, new vehicles would not be able to travel more than 10 mph above the speed limit.

"SEMA and PRI stand firm against the proposed California legislation mandating speed limiters on new vehicles," said Christian Robinson, SEMA and PRI's senior director of state government affairs and grassroots. "This one-dimensional approach fails to acknowledge the nuanced nature of driving and the diverse needs of motorists. Imposing rigid restrictions undermines the essence of individual responsibility embraced by automotive

enthusiasts, and we advocate for solutions that balance safety with the enjoyment of driving experiences."

Currently, devices that prevent vehicles from exceeding a certain speed are not required. Among other issues, this proposal makes broad assumptions about real-world circumstances. This one-size-fits-all approach fails to recognize the diversity of driving experiences and the individual responsibility that automotive enthusiasts take seriously.

PRO-BUSINESS TAX BILL PASSES HOUSE COMMITTEE

The US House of Representatives passed H.R. 7024, the Tax Relief for American Families and Workers Act of 2024. The PRI- and SEMA-supported bill gathered strong bipartisan support, passing by a margin of 357-70.

Sponsored by Rep. Jason Smith (MO-08), this bipartisan legislation allows for immediate expensing of research and development (R&D) and investments in equipment, reduces reporting for small businesses using subcontractors, increases the small business expensing cap by nearly 30%, and expands the Child Tax Credit. The legislation now awaits consideration in the US Senate's Finance Committee.

"PRI is proud to support the 'Tax Relief for American Families and Workers Act of 2024,'" said Eric Snyder, PRI's senior director of federal government affairs. "The tax incentives in the bill will provide a shot in the arm for small businesses, including motorsports parts manufacturers, retailers, and race tracks."

PRI members and manufacturing businesses can benefit from the following parts of this legislation:

R&D expensing: Businesses of all sizes can immediately deduct the cost of their US-based R&D investments instead of over five years, encouraging American innovation and improving our competitive position versus China and the rest of the world.

Interest deductibility: Continued flexibility for businesses forced to borrow at higher interest rates to meet their payroll obligations and expand their operations.

One-hundred percent expensing: Restore full and immediate expensing for investments in machines, equipment, and vehicles.

Expand small business expensing cap: Increase the amount of investment that a small business can immediately write off to $1.29 million, an increase above the $1 million cap enacted in 2017.

Cut red tape for small businesses: Adjust the reporting threshold for businesses that use subcontract labor from $600 to $1,000 and index for inflation, the first update to the threshold since the 1950s.

SEMA and PRI, together with more than 260 organizations, signed the National Association of Manufacturers' letter to US House and Senate leadership in support of the Tax Relief for American Families and Workers Act of 2024.

PRI will provide updates on the progress of this important legislation. For more information, contact Tiffany Cipoletti at **tiffanyc@sema.org**.

WEST VIRGINIA, SOUTH DAKOTA INTRODUCE BILLS SUPPORTING INTERNAL COMBUSTION ENGINES

West Virginia Delegate Gary Howell, chairman emeritus of SEMA's State Automotive Enthusiast Leadership Caucus, introduced SEMA- and PRI-supported legislation that would prevent any state or local government unit from restricting the use or sale of motor vehicles based on the energy source used to power them, including internal combustion engines (ICE).

In addition, South Dakota has introduced SEMA- and PRI-supported legislation that would prevent any county or city in the state from limiting access to ICE and related technology. The bill awaits consideration by the House Local Government Committee.

"As advocates for the motorsports industry and individual freedom, we applaud West Virginia and South Dakota for taking a stand in favor of consumer choice," said Christian Robinson, PRI's senior director of state government affairs and grassroots. "The legislation introduced reflects our commitment to preserving the rights of residents to choose the vehicle technology that aligns with their needs and preferences. This move sets a positive precedent, and we hope other states will follow suit in championing individual liberty and the diverse automotive landscape."

West Virginia and South Dakota are the first states to introduce this legislation in the 2024 state legislative sessions but follow seven other states (Texas, Oklahoma, Kansas, Wisconsin, Michigan, Ohio, and North Carolina) that have previously passed similar legislation and resolutions.

PRI believes West Virginia and South Dakota residents, not the government, should be allowed to choose the type of vehicle technology that best serves them and their families.

For details, contact **SAN@sema.org**.

VIRGINIA LAWMAKERS INTRODUCE BILL TO REPEAL VIRGINIA'S ZEV MANDATE

In Virginia, lawmakers introduced PRI-supported legislation to repeal the law tying the state to California's motor-vehicle emissions standards. Under current law, new gas- and diesel-powered vehicle sales will be banned starting in 2035. The multiple bills now await consideration in the Virginia General Assembly.

PRI does not believe that the government—Virginia's or California's—should be choosing winners and losers in the automotive market. Virginians should decide what vehicles are best for them and their families.

"In the spirit of individual choice and free-market principles, PRI stands firmly against government interference in the automotive market," said Christian Robinson, PRI's senior director of state government affairs and grassroots. "Virginians deserve the autonomy to decide their preferred vehicles without the imposition of mandates. We believe in empowering consumers, not dictating winners and losers."

PRI will provide updates on the progress of this important legislation. For more, contact Kiley Chapley at **kileyc@sema.org**. PRI

INDUSTRY NEWS

INDUSTRY MOURNS PASSING OF RON ISKENDERIAN, 75

Ron Iskenderian

Ron Iskenderian, the son of industry icon Ed Iskenderian and the former vice president of Isky Racing Cams in Gardena, California, has passed away at the age of 75. He was the eldest son of Ed and Alice Iskenderian.

"Ron passed away on January 28 from complications of a stroke. He will be sorely missed by all of us," according to a company release.

MELLING ENGINE PARTS ACQUIRES QUALCAST

Melling Engine Parts, a Jackson, Michigan-based manufacturer of oil pumps and other powertrain components, has acquired QualCast, a supplier of valvetrain automotive parts located in Nashville, Tennessee.

Qualcast offers valvetrain solutions for heavy-duty, industrial, light- and medium-duty, marine and performance applications. Melling and QualCast will continue operating independently, a company source said.

RACE WINNING BRANDS SELLS K1 TECHNOLOGIES' INVENTORY TO TITAN MOTORSPORTS

Race Winning Brands (RWB), a high-performance parts manufacturer headquartered in Mentor, Ohio, has sold its remaining United States inventory of K1 Technologies products to Titan Motorsports, an Orlando, Florida-based provider of performance components.

K1 Technologies is a brand of performance connecting rods and crankshafts for domestic, European, and sport compact markets. Following the sale, Titan Motorsports will provide service to American and Canadian K1 Technologies customers and all K1 inventory will move to Titan's warehouse and sales operations.

EVERNHAM, KAUFFMAN ACQUIRE IROC BRAND

IROC Holdings, a Mooresville, North Carolina-based joint venture established by NASCAR Hall-of-Famer Ray Evernham and former NASCAR Cup Series team owner Rob Kauffman, has acquired the rights to the International Race of Champions (IROC) brand.

The joint venture was created with the intent to host an IROC racing event in 2024 with historic IROC cars while exploring future opportunities, according to a statement announcing the acquisition.

DRISSI MOTORSPORTS PURCHASES SHOWTIME MOTORSPORTS

Drissi Motorsports, the California-based Trans Am Series team, has acquired Showtime Motorsports.

Tomy Drissi will compete full time in the 2024 Trans Am championship for the team, and Ken Thwaits, driver, and former owner of Showtime Motorsports, will stay on as team principal.

Drissi Motorsports' newly acquired racing operations will continue in North Carolina while retaining the current talent, specialists, and facilities. Drissi Motorsports' existing staff and facilities will handle business operations, sponsorship, marketing, and social media content from its base in Hollywood, California.

UK-BASED REVO OPENS CALIFORNIA FACILITY

REVO, a United Kingdom-based provider of performance tuning electronics and performance parts for Audi, VW, Porsche, Ford, and other global brands, has opened a new facility in Murietta, California, to better serve the North and South American markets.

The California facility serves as a hub for all United States distribution and sales, and as a development center for North American vehicles. REVO will also offer training for factory certification at the facility.

UK-based REVO has opened a new facility in Murietta, California

SKIP BARBER RACING SCHOOL OPENS NEW CORPORATE HEADQUARTERS

The Skip Barber Racing School has opened a new facility at VIRginia International Raceway (VIR) in Alton, Virginia, that will serve as the company's corporate headquarters.

Designed to house all Skip Barber entities, the headquarters feature a workshop to support the racing school's fleet of vehicles, as well as a fabrication shop and in-house dynamometer. Additionally, the facility was built with new classrooms, a driver-development center, simulators, and a gym.

FORMER STELLANTIS EXECUTIVE MARK STEWART NAMED GOODYEAR CEO

Mark Stewart, former COO of Stellantis North America, has been elected CEO and president of the Goodyear Tire and Rubber Company.

Stewart will succeed Richard J. Kramer, who previously announced his planned retirement from the Akron, Ohio, company following 24 years of service, including 14 as chairman, CEO, and president.

HYPERCRAFT APPOINTS NEW PRESIDENT

Hypercraft, an electric powertrain manufacturing and engineering company with operations in California and Utah, has appointed former Maersk executive Brian Bowers as president.

Bowers, who has more than 24 years of business development experience, will support the growth and demand from global OEMs and the aftermarket, a company representative said, while working closely with co-founder and CEO Jake Hawksworth.

ÖHLINS RACING ADDS TO LEADERSHIP TEAM

Öhlins Racing, a Swedish manufacturer of suspension components, has named Marc McAllister as the brand's new vice president and general manager, and Tom Wittenschlaeger to the newly created position of general manager, North America.

McAllister replaces Henrik Johansson, who announced last fall that he would retire after nearly 30 years as a member of the Öhlins team.

PHILIP DOBBS JOINS HOLLEY AS SVP OF CUSTOMER EXPERIENCE MARKETING

Holley in Bowling Green, Kentucky, has appointed Philip Dobbs to the new role of senior vice president of customer experience marketing.

As senior vice president of customer experience marketing, Dobbs will lead strategy and management for the full Holley brand portfolio, overseeing advertising and promotions, public relations, content marketing, trade shows and events, and digital/website solutions.

MICHAEL PRINTUP NAMED COO OF PARELLA MOTORSPORTS HOLDINGS

Michael Printup has been named the COO of Parella Motorsports Holdings (PMH). In his new role, Printup will oversee operations of the Trans Am Series and Sportscar Vintage Racing Association (SVRA).

Printup joined PMH last year and has been serving as president of SVRA since July. He previously spent nearly three decades working for NASCAR, most notably in the role of president of Watkins Glen International.

Printup will replace John Clagett, who served as president and CEO of the Trans Am Race Company for 13 years.

LUBRICATION SPECIALTIES HIRES STEVE GREEN TO LEAD DEALER SALES FOR HOT SHOT'S SECRET

Lubrication Specialties, the manufacturer of Hot Shot's Secret located in Mt. Gilead, Ohio, has appointed Steve Green to lead the company's dealer sales management.

He will be responsible for expanding the brand's dealer network and developing sales staff, territories, promotions, and customer support to ensure a robust sales network for the Hot Shot's Secret product line.

MOTION INDUSTRIES NAMES NEW SVP OF STRATEGY AND MARKETS

Motion Industries, a distributor of maintenance, repair, and operation replacement parts, and a provider of industrial technology solutions, has named Chris Cleland as its senior vice president of strategy and markets.

In the new role, Cleland will lead the Birmingham, Alabama-based company's strategy development for its business groups, as well as its e-commerce and digital teams. He will report to James Howe, Motion's executive vice president, chief commercial officer, and chief technology officer.

CHRIS WARD APPOINTED HISTORIC SPORTSCAR RACING PRESIDENT

Chris Ward

Chris Ward has been named president of Historic Sportscar Racing (HSR), taking over leadership of the Daytona Beach, Florida-based, IMSA-owned vintage and historic sports car racing sanctioning body from David Hinton.

Ward most recently served as head of motorsport for Lamborghini North America from 2014 to 2023, where he oversaw day-to-day operations of the IMSA-sanctioned Lamborghini Super Trofeo North America Series, including sanctioning body coordination, team and customer liaison and acquisition, parts supply chain management and logistics, and hospitality operations.

NASCAR, DRAFTKINGS EXPAND PARTNERSHIP

DraftKings, located in Boston, Massachusetts, and NASCAR, headquartered in Daytona Beach, Florida, have agreed to terms on a written designation agreement, allowing the gaming company to operate in North Carolina, pending licensure and regulatory approvals.

DraftKings also has been named the exclusive daily fantasy sports partner of NASCAR in the United States and Canada, becomes an Authorized Gaming Operator of NASCAR, and will receive additional sponsorship benefits within the NASCAR ecosystem nationally.

IMSA ANNOUNCES 2024 HALL OF FAME INDUCTEES

The International Motor Sports Association (IMSA), Daytona Beach, Florida, has announced its second class of inductees for the IMSA Hall of Fame.

The Class of 2024, consisting of both competitors and vehicles, includes Derek Bell, Geoff Brabham, Jim Downing, Gianpiero Moretti, Bob Riley, Jack Roush, Nissan GTP, Porsche 935, Roush Mustangs, and Toyota GTP.

NASCAR CUP SERIES ESTABLISHES 2024 SHORT TRACK, ROAD COURSE RULES PACKAGE

NASCAR Cup Series officials have updated the short-track and road-course rules package for 2024, the Daytona Beach, Florida, sanctioning body announced.

The changes, including a simplified rear diffuser with fewer vertical strakes, will go into effect at the first short-track race of the season at Arizona's Phoenix Raceway in March. The aerodynamic changes aim to promote more competitive racing on those track types.

ZMAX CARS TOUR ADDS WEST COAST SCHEDULE FOR 2024

The Mooresville, North Carolina-based zMAX CARS Tour will expand to the West Coast in 2024 in the form of the zMax CARS Tour Pro Late Model Series West.

The nine-race season will open on February 17 at Kevin Harvick's Kern Raceway in Bakersfield, California, and includes stops at Madera Speedway, Irwindale Speedway, The Bullring at Las Vegas Motor Speedway, and All American Speedway in Roseville, California.

For all the latest motorsports industry news, visit primag.com/industrynews.

RACE SHOP

ADVANCED CLUTCH TECHNOLOGY

advancedclutch.com

ACT has released a full range of 10.5-inch Mod-Twin Style Clutch Kits for the 2018–2023 Ford Mustang GT. These kits are made to handle many types of power adders including superchargers, turbochargers, and nitrous oxide, and feature a forged aluminum cover and an 18% weight reduction.

Contact: 661-940-7555

HOT SHOT'S SECRET

hotshotsecret.com

EDT+ Winter Defense is a seven-in-one anti-gel fuel booster developed to keep diesel-powered vehicles operable and improve cold starts when temperatures drop below freezing. It includes anti-gel and anti-icing properties to reduce fuel line freeze-ups to keep diesel engines fully operational as low as -40 degrees F.

Contact: 800-341-6516

RADIUM ENGINEERING

radiumauto.com

Radium Engineering has released three different universal oil catch can kits. These kits use Radium's patented Fluid Lock oil catch cans and include a variety of fittings and hose for universal installation. Everything comes in the box under one part number.

Contact: 503-783-8850

SUPERTECH PERFORMANCE

supertechperformance.com

Supertech engineers utilize the latest in CAD software and Finite Element Analysis (FAE), which enable them to design a strong, lightweight, and high-performance piston. Supertech offers high-performance pistons for nearly every application and can custom build to the user's specific requirements.

Contact: 408-448-2001

PERFORMANCE INDUSTRY REPS

READ PRI'S MISSION STATEMENT AT
PERFORMANCERACING.COM/MISSION
AND SEND US YOUR FEEDBACK.

SOCIAL STATUS

Put AI to work for you by incorporating ChatGPT in your social media strategy.

Artificial Intelligence (AI) is continuing to advance at a rapid pace, and many industries and departments are utilizing its capabilities. Marketing, and more specifically social media, is one of those areas that can benefit from AI tools. Although there are various AI tools, including Flick, Dall-E, Heyday, and many more, we will discuss ChatGPT and how it can be used to help enhance social media. However, we want to preface this article by saying that although AI can be a valuable tool, human oversight is still essential.

After typing www.chatgpt.com into your web browser or downloading the app on your mobile device and setting up a free account, you can start benefitting. To use this tool, simply input prompts into the message box. (Side note: ChatGPT also offers upgraded plans with access to more in-depth features.)

Various ways ChatGPT can be used for social media include content generation, keyword research, content planning and scheduling, copywriting, trend monitoring, content optimization, and much more.

For assistance in generating content, be detailed with your prompts. Ask direct questions and be specific with which social media platforms you're referring to. For example, ask ChatGPT, "Can you give me content ideas to encourage more engagement on Facebook and Instagram?" If you're not satisfied with the list of ideas ChatGPT comes up with initially, just follow up with, "Provide more ideas," and more options will be produced. You can also be more specific with a prompt, with something like, "What's a fun question we can ask our followers to encourage engagement? Something related to motorsports." ChatGPT can also provide inspiration for a mix of topics related to your industry or niche.

For keyword research, ask ChatGPT to identify relevant keywords or hashtags to optimize your social media content for searchability and discoverability. This can help with social media captions and SEO.

When building a social media calendar, ChatGPT can help determine the best days and times to post as well as ensure that you're using a variety of content. It can also assist with organizing your content calendar and scheduling posts.

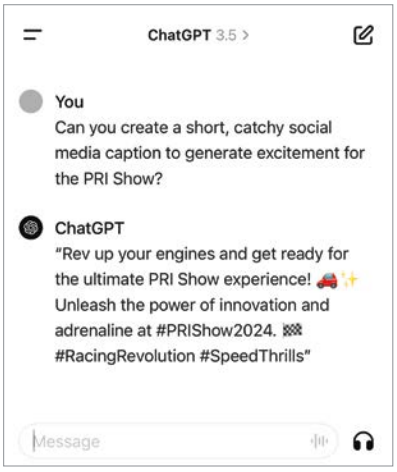
Need help writing creative and engaging captions for social media? ChatGPT can facilitate that as well. It can assist with crafting messages to enhance the effectiveness of your campaign. Here's one example prompt PRI might ask ChatGPT: "Can you create a short, catchy social media caption to generate excitement for the PRI Show?" It's not imperative to use the exact caption that ChatGPT generates, but you can use it as a starting point and modify it to fit your brand.

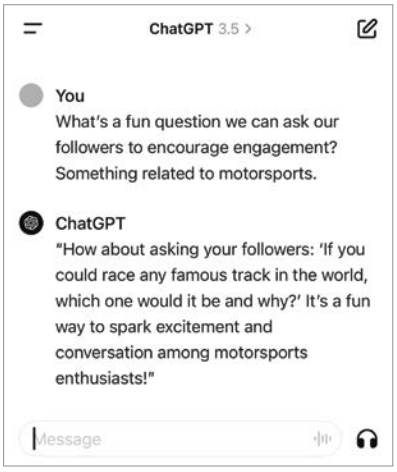
Stay informed of the latest industry trends by asking ChatGPT about any new developments or updates. This can help you create relevant content for your audience and encourage you to try new features and content ideas, utilizing the most current trends.

Want to reach a larger audience or resonate with the audience you currently have? Request suggestions from ChatGPT on how to optimize your social media content for engagement and reach. This can provide insight into what type of content you should be creating more of or offer new content ideas to try.

Whatever you might need help with regarding social media, when using ChatGPT, experiment with different types of questions and prompts. The more information you provide, the better.

ChatGPT, and AI in general, can be a helpful tool to enhance your social media efforts, but all generated content should still be reviewed and modified by a human to align with brand and messaging strategies. Regularly monitor your social media performance, and then utilize ChatGPT to make adjustments when necessary. Get started now and use ChatGPT wisely! PRI





AD INDEX

WOOD PERFORMANCE

KNIGHT PROWLER

HIGH PERFORMANCE CAMS

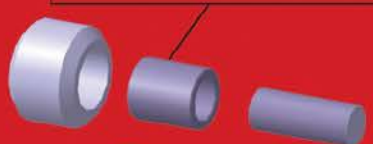
NEW

PLATINUM LIFTERS

NEW

WADL-9012 MILWAUKEE-8 & TWIN CAM DIRECTIONAL LIFTERS

DUAL FLOAT NEEDLELESS BEARING



DIRECT SHOT® OIL CHANNELS

.080 ADDITIONAL LIFTER TRAVEL

AMERICAN MADE
AMERICAN PROUD

WE HAVE DONE IT AGAIN!!

PATENT PENDING

NEW DESIGN

- DUAL FLOAT BEARING™
- OVER 300% INCREASE IN ACTIVE BEARING SURFACE
- 400% INCREASE IN YIELD STRENGTH VS. BRONZE BUSHINGS
- HYDRO DYNAMIC BEARING INSTEAD OF STATIC DRAG
- PROPRIETARY MATERIAL AND HEAT TREATMENT

TEST RESULTS

- RIGOROUSLY ROAD & DYNO TESTED
- 40+ HOURS @ 3000+ RPMS
- OVER 3.6 MILLION LIFTER CYCLES
- 800 LB. OPEN VALVE SPRING PRESSURE, OVER 2.9 BILLION LBS.
- POST INSPECTED WITH ZERO WEAR

NO NEEDLE BEARINGS · NO BRASS BUSHINGS · NO BRONZE BUSHINGS

WOOD PERFORMANCE HAS PARTNERED WITH HY-LIFT JOHNSON, TOP LINE AUTOMOTIVE ENGINEERING , INC. TO PRODUCE THESE PROPRIETARY, MULTI-FIT HIGH PERFORMANCE LIFTERS. THEY ARE MADE TO FIT MILWAUKEE-8 & TWIN CAM ENGINES USING THE KNIGHT PROWLER SPECIFICATIONS. THEY ALSO INCLUDE THE DIRECT SHOT®EDM TECHNOLOGY WITH DUAL OIL PORTS TO FEED THE DUAL FLOAT BEARING.™
"DUAL FLOAT BEARING" AND "DIRECT SHOT" ARE TRADEMARKED BY TOP LINE AUTOMOTIVE ENGINEERING, INC.

3440 MARTIN STREET SOUTH, SUITE 6 CROPWELL, ALABAMA 35054
PHONE: 205-525-4949 FAX: 205-525-4940
WWW.WOODCARBS.COM

HYLIFT JOHNSON LIFTERS

DO YOU KNOW WHO MAKES YOURS?

Hy Lift Johnson Lifter Co., the original Iconic brand, is the only global premier designer and manufacturer of engine lifters. Located in Muskegon, Michigan for over 85 years! We manufacture the most complete line of stock and high performance lifters in the industry! Hydraulic, Mechanical, Roller, Flats, Tie Bar Retro fit and Lash adjusters as well as Slow and Fast Leak Down versions and our Patented EDM Direct Shot® and Patent Pending Dual Float™ Bearing system. All made in the USA where Quality, Performance, Endurance and Engineering still matter!

THE ONLY COMPANY THAT DOES IT ALL!

As Topline celebrates 50 years of supplying quality import engine parts, we look forward to continuing our tradition of building strong relationships with our customers by delivering dependable, reliable service.

Topline truly embodies the spirit of innovation, integrity, trust and excellence. We understand that success doesn't come from what is done occasionally, but from what is done consistently. We pride ourselves on this commitment. Our products are sold and recommended by the most knowledgeable, experienced and trusted engine builders and parts distributors in the world.

TOPLINE
Automotive Engineering, Inc.
Parts and Components

800-441-1400 | TOPLINEAUTO.COM

WIN WITH ROTTLER!

H85AX

THE HOTTEST SELLING HONE ON THE MARKET

CONCENTRICITY, CONTROL, CONSISTENCY

EXACT CROSS HATCH ANGLE, TOP TO BOTTOM

AUTOMATIC HOLE-TO-HOLE

THREE YEAR WARRANTY

ENGINE PERFORMANCE EXPO

WWW.ENGINEPERFORMANCEEXPO.COM

ROTTLER

ROTTLERMFG.COM 1-800-452-0534