

Energy-Efficient Racing: A Blistering Future Pace



Electric vehicles have improved in performance in just a few short years, and university students worldwide are working to transfer the knowledge they learn about electric vehicle technology to the race track. Seen here, students prepare a kart powered by

Innovations are taking place now to lead to a more productive—and profitable—electric race vehicle market.

By Louise Ann Noeth

Technology in the realm of electric vehicles in motorsports is moving at a blistering pace. In fact, predictions for advances within the next five years include incredibly fast charging: upwards of 80 percent in 10 minutes, according to Mark Gemmill, CEO of Electric GT (EGT) Championship based at Circuit Pau-Arnos in France. “With charging that fast, we expect to be able to enter into endurance racing, which will be especially meaningful to the public still on the fence about EVs,” he said. “You will also see new brands coming in who wish to prove they have the next ‘Tesla killer,’ and look for improvements in thermal management.”

John Metric of the National Electric Drag Racing Association (NEDRA) in Muskegon, Michigan, predicts new battery chemistry will emerge, and miniaturization of transistors as well as lower resistance components. “Innovators like Jeg Coughlin Sr. saw this coming several years ago and have built a whole squadron of electric junior dragsters to show the world how this will be done,” he explained. “We think leaders and innovators like that will break down a lot of barriers.”

What started as a patriarchal idea for “mini Coughlins,” has resulted in three fully functional electric race cars. In fact, the prototype won its first race in April 2017, running 7.9 seconds at 80 miles per hour on a one-eighth-mile track with a 16-year-old driver. “We could easily run in mid six seconds, but we are intentionally limited for safety reasons,” revealed Jeg Coughlin Jr. of Delaware, Ohio.

Danny J. White, Director of Motorsports at Purdue University in West Lafayette, Indiana, is certain the advances made in EV racing will change the public perception of the viability of the technology citing the Bolt EV with a 200-mile range, and the use of the electric transaxle with a bar wound stator, robust bearing and helical gear set as a perfect example.

“Many new offerings will continue to make EV a relevant market for motorsports,” he observed. “With the Faraday Future FF91 and its 1050-horsepower drivetrain, to GKN and its electric drive modules, EVs will continue to get much better range, offer more efficient drivetrains, and lighter chassis that will lower cost to the consumer. As that moves forward, it makes EV racing much more attractive. The instant torque of EV racing will excite the best of the drivers if they can get past their petrol heritage.”

If that statement made you bristle, White envisions something much more upsetting, an industry-wide “I told you so” that could very well be uttered in less than a decade. “The biggest changes I see moving forward are the removal of the driver from the equation,” he stated. “The disruptive technology of autonomous transportation and autonomous racing will begin to take hold in the US and the UK and they must work together to stay on top of the EV/autonomous market and technology.”

To do that, Purdue already has a program in place that provides a pathway from grammar school to the starting grid. “We utilize the M-STEM3 K–16 STEM initiatives to train young, up-and-coming engineers, and technologists in areas of alternative fuel vehicles and autonomous systems design. We are one of the only universities to have our own state-of-the-art go kart grand prix tracks on campus,” White said.

By the way, White extends a standing invite to other universities to not only join EV karting, but also to partner up for an adventure in the autonomous EV racing as well. Further, if you wonder where you might find the next bright spark to join your company, Purdue has got you covered.

“One of the big things that will occur in the next five years is the High School evGrand Prix, which is one of the premier motorsports-based college and career readiness STEM programs in the world,” said White. “As the program moves across the United States and the UK, we hope to get this really cool platform of STEM relevance into the classrooms as we deliver a great teaching tool to help the teachers attain their educational outcomes.”

This includes a middle school M-STEM3 offering, working with NHRA to get EV junior dragsters into the middle school classrooms just like karting works at the collegiate and high school levels.

That will take securing supporting foundations in motorsports, but White said the curricula is mapped and ready. “We never stop educating students with the great relevant platforms available in motorsports to teach math, science, technology and engineering. Simultaneously we are creating new fans for the motorsports industry as a whole. We are getting our supporting sponsors’ brands into every school we have in the program. It is a win-win for all involved,” he concluded.