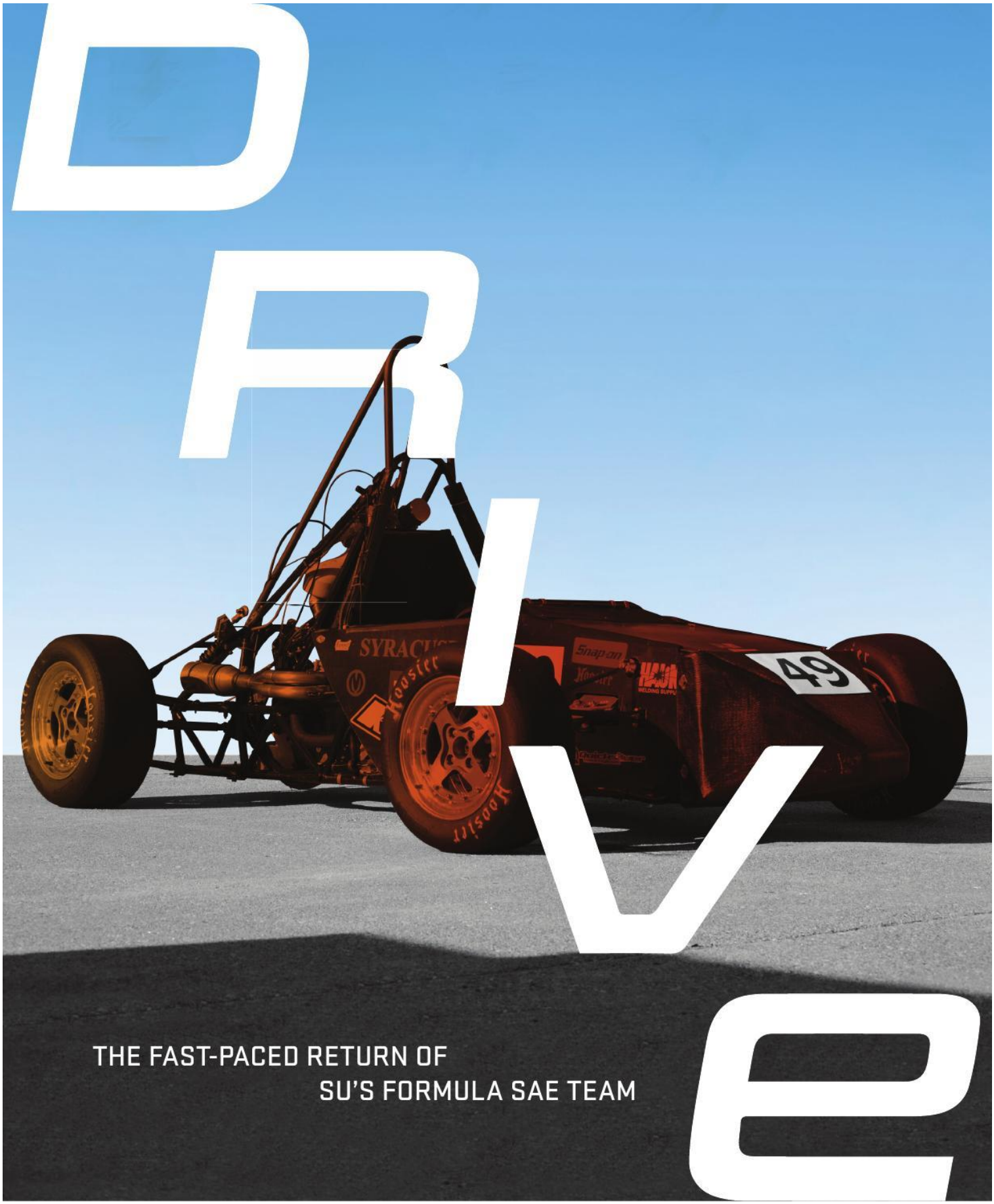
DRIVE



THE FAST-PACED RETURN OF
SU'S FORMULA SAE TEAM

The list of things left to be done was as long as it had ever been. With the spring semester over, the number of people left to check things off the list had been cut in half, then cut some more. A car lay in pieces, strewn about different corners of a cramped space in the basement of Link Hall. Just two weeks before a national Formula Society of Automotive Engineers (SAE) racing competition in Nebraska, the team wasn't even sure the engine would start.

For two full semesters, president of the SAE Joel Rosado '16 and the rest of the team had been plugging away on Syracuse University's first race car in years. Quitting was not an option. They were fulfilling their true mission with every step forward.

What was once a casual hobby squeezed in between classes had become a two-shift manufacturing operation behind on its deadlines. Everyone was hustling, and they were fairly sure it wouldn't be enough to finish. With an odd sense of satisfaction, they continued, and still, the engine hadn't been started.

In the final days before the competition, work shifts went around the clock, with some members forgoing sleep for assembly. They were weary, but tenacious. They were confident that if they kept at it, they would have the car ready to make the drive to the Midwest, but there was no room for setbacks.

A moment of truth arrived around five in the morning two days before the competition. After a full night of working on the car with all hands on deck, the team members rolled it out onto the loading dock. They collectively held their breath, and turned the key, and the engine roared to life. They were off. Over the first hurdle and onto the next.

THE ROADBLOCK

After an arduous 24-hour road trip, they arrived in Nebraska in time to register, set up their trailer, and prepare for a series of intense inspections. The car may have been in one piece with an engine that started, but there was still a full day's worth of last-minute adjustments and assembly that needed to be made to ensure it would pass inspection.

During the very first inspection, in which the car is subjected to a 100-page rulebook, they were told that the distance between the pedals and the top of their roll hoop was too short. They'd need to weld an additional curved metal tube to the top of their existing roll hoop in order to pass. Back in Syracuse, this issue could easily be solved with a trip to Link Hall's machine shop.

Here on the hot asphalt at Lincoln Airpark, the team had no metal tube, and nothing to bend it or weld it with.

In a bout of frustration, Rosado broke off from the group to blow off some steam. All of their hard work was about to be undone because they'd built the car incorrectly.

Despite the SU team's imminent demise, it wasn't long before he began to be absorbed in the scene that was around him. Surrounded by more than 100 other teams, each with their own designs and enthusiasm, he couldn't help but be drawn back into the excitement.

"I got talking to another team about their car and it just so happened that they had the same exact problem last year and had overcome it," described Rosado. Instead of using the SU team's misfortune to its advantage, this other team was kind enough to give him specific instructions to get the job done. He rushed back to the team to find that fellow team members Ryan Olsen and Gabriel Smolnycki were one step ahead, having contacted the event's host, the University of Nebraska-Lincoln, for help. The University generously supplied the metal and the pipe bender, and a welding tent on the airpark provided the welding. Just a few hours later, the fix was in place and they were over another hurdle. Of course, as with all hurdles, there were more to come.

THE CAUTION FLAG

After passing the second inspection with ease, the team was now permitted to run the engine in its paddock. Before this, the engine had only ever run about five minutes before loading it in the trailer to bring to the competition. The problem was that the engine needed to be tuned badly. The throttle was all over the board; it revved loudly, subsided, and then revved again. The best way to fix this was to drive the car, gather data, and optimize. Unfortunately, the rulebook states that you cannot drive your vehicle until after the fourth inspection. They'd have to fake it.

"We thought maybe we could tune it enough to pass the noise inspection. If we could just sustain our RPMs at a certain level for five seconds while keeping the noise below 110 decibels, we'd be through. We only had a couple of hours to get it tuned, but we knew we had a shot," said Rosado.

During the noise inspection, they were derailed. The car's battery was dead. They charged it, and it died again. All of the frantic energy and progress on the car came to a halt. Time expired on the third inspection, and the team's race to the finish was over-done in by a drained battery.

"We didn't do it. We were disheartened. It was a very sad moment. We realized how far

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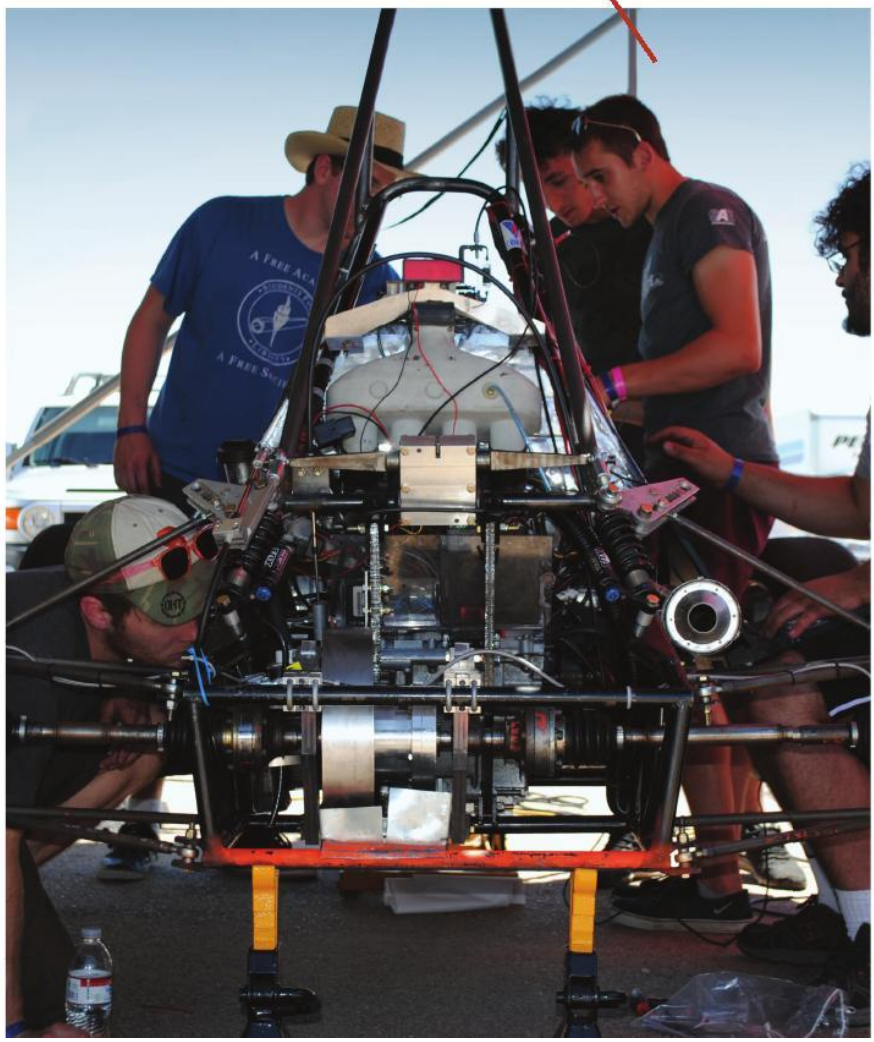

SPOTLIGHT

The SAE Dream Team

L to R: Gabriel Smolnycki '16, Jeffrey Clark '17, Joel Rosado '16, Ryan Olson '14, G'16, Nicholas Pypiuk '16, Colin Pritchard '14, G'15, Oliver Scigliano '17, Kyle Donaghey '15, and Josh Beckerman '17. Professor Jeongmin Ahn is in the vehicle.

we had come. We weren't angry—we were upset the we couldn't race," Rosado said.

As the urgency of the situation dissipated, the team members began to feel the weight of their own exhaustion. They admired the cuts, scrapes, carbon fiber splinters covering their hands and arms. They'd earned them from their efforts to complete the car and their frantic pace. Feeling a sense of accomplishment through their dejection, they stayed to watch the other teams compete and observed lessons they could take away for the future. After a long ride home, everyone went his separate ways for the remainder of the summer.

THE CHECKERED FLAG

Despite the disappointment in Nebraska, Rosado puts very little energy into feeling sorry for himself. In fact, it's hard to even pull a negative comment out of him. After a year of work that seemed to end in failure, and a trip to a competition in which the SAE team wasn't able to race, Rosado can only speak of success.

"Our mission is not to win a race. Our mission is to give the members of our team an experience that they can't get anywhere else. Without actually applying their engineering knowledge to something practical like this, I don't believe they will get everything they can get out of this college experience. We're pulling things from thermodynamics, from statics, from mechanics of solids. It's in our hands, it's tangible. We made something that we designed and tested and it works. Our biggest success is all of the knowledge we gained. It's been an unbelievable experience."

Today, the team is recharging its batteries—figuratively and literally. The cramped room in Link Hall has returned to a more sustainable pace. If you drop in the team's headquarters, you'll likely see the car in some state of disassembly, as the team members begin to make adjustments for next year's competition and after a test drive at a local go-kart track.

They know the car runs. They are confident they can make it to next year's competition. But most of all, they know they have the drive to complete their true mission—to learn. ●

THEY ADMIRED THE CUTS, SCRAPES, CARBON FIBER SPLINTERS COVERING THEIR HANDS AND ARMS.