

# Student Team Sets World E-Car Acceleration Record

*The AMZ racing team shattered the world record for electrically powered vehicle acceleration with an e-racer that darted from zero to 100 km/h in just 0.956 seconds. Called mythen, the vehicle built by ETH Zürich and Lucerne University students for the Formula Student competition shaved more than a third off last year's record-setting time.*

*By Mirkka Rissa, Sr. Marketing Communication Manager, Vincotech*

## The Formula Student engineering challenge

Founded by the Society of Automotive Engineers in 1981, Formula Student is the world's biggest engineering challenge of its kind. More than 600 teams from universities around the globe compete with their student-built race cars. An expert jury assesses the engineering design, production cost, and business plan. The cars also compete in straight-line acceleration, skid pad figure-eight cornering, endurance discipline off 22km, and autocross events to demonstrate their dynamic performance. The category for electric vehicles debuted in 2010 as the idea of sustainability started gaining traction. After building three combustion-engine racers, the AMZ team decided to try their hand at developing fully electric alternatives.

## The AMZ team

The Academic Motorsports Club Zurich (AMZ) is comprised of around 30 students and alumni from ETH Zürich and Lucerne University of Applied Sciences and Arts. Some team members devote an entire academic year to the project; others contribute on a part-time basis.

Student team alumnus Daniel Winz was the inverter module lead for this record-setting project. Having studied electrical engineering at Lucerne, he has been a team member since 2016. He says, "It's a cool project to be involved with when you have a general interest in engineering. The possibility of spending a whole year focusing on building a car is pretty nice." ETH Zürich student Jérôme Kaufmann agrees: "I joined the team in 2020. You have the opportunity to build a car from scratch, travel to competitions, and be part of the Formula Student racing world with universities from around the world. It's unique."

## Gearing up for the summer season

The AMZ team's journey begins each fall. Its first task is to brainstorm a new design. With a blueprint ready to go before the year is out, production wraps up between May and July. The racing team hits the circuits in summer, competing mainly across Europe with all core members usually joining the entourage.

No-one wants to repeat earlier seasons' mistakes when building a new car from scratch. Well aware that lessons learned are the stepping stones to continuous improvement and innovation, these engineers meticulously log every detail as the project progresses. "We have alumni to guide us and we document every task and result in our Wiki," says Daniel Winz. The current year's module lead meets with the previous years' counterparts to make sure the team building the new car steers clear of dead-end ideas. "With a racing car you have to customize a lot. This year we made many improvements such as a new inverter and drive unit, which totally paid off," says Daniel.

## A dream machine

The team reengineered and optimized a chassis built for the 2019 season. It also spent much of the year reengineering the drivetrain, aerodynamics, and electrical systems for 2023's mythen.

The inverter developed for this Formula Student car is equipped with Vincotech's SiC MOSFET module (10-EY122PA005ME-LU39F08T). It is not the first record-setting racer to feature a Vincotech product. In 2016, the AMZ grimsel clocked in at 1.513 seconds with an earlier VIN module (80-M3076PA100SC-K804F48) that featured fast IGBTs with SiC diodes.

A brilliant blend of technology and engineering, this year's design enabled Kate Maggetti to drive mythen straight into the book of Guinness World Records. This car not only pulverized the previous record; it was also the first e-vehicle to break through the one-second barrier, a milestone achievement that speaks volumes about electric cars' enormous potential.

## Sponsorships

The student team is determined to keep up the good work with the help of sponsors: "Our mission is to push the limits of electric racing and inspire young minds to take on challenges in engineering and business. By learning and innovating together, we aim to serve the scientific and student community."

Vincotech is happy to support that lofty aim with power modules and advice. "It's a pleasure to be involved. We provide technical guidance when it's needed, but the students do all the work," says Vincotech FAE Patrick Baginski.

It takes great ideas and excellent teamwork to set a Guinness world record in a technical discipline. "The passion, innovation, and dedication these students bring to the project each year is impressive. We have long supported AMZ and will continue to do so. The team is an inspiration for us," says Vincotech CEO Eckart Seitter.



Congratulations to AMZ for besting the world record. We look forward to the new season next year when AMZ will be back – perhaps with another groundbreaking achievement.

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