



Sparky Top Level and Accomplishments



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A joint project of the Lafayette College ECE and ME Departments

EPAL (External Panels and Lights)

The team designed and built a new dashboard to be mounted on the front of the car to show drivers warnings from safety loop and SCADA. The cockpit panel and side panels house buttons from the safety loop and are connected to CarMan.

SCADA (Supervisory Control and Data Acquisition)

The SCADA system created a workable configuration file to add in sensors wherever needed. This allows the system to monitor these sensors and to record and control data. This data can be seen after a session through their post processing system. SCADA is housed within the Logic board in CarMan.

Chassis

Our Chassis is constructed of a 4130-steel spaceframe, made up of 1 inch tubing, weighing roughly 140 pounds without any other components mounted. This year's major progress was completing a redesign of the rear sub-frame.

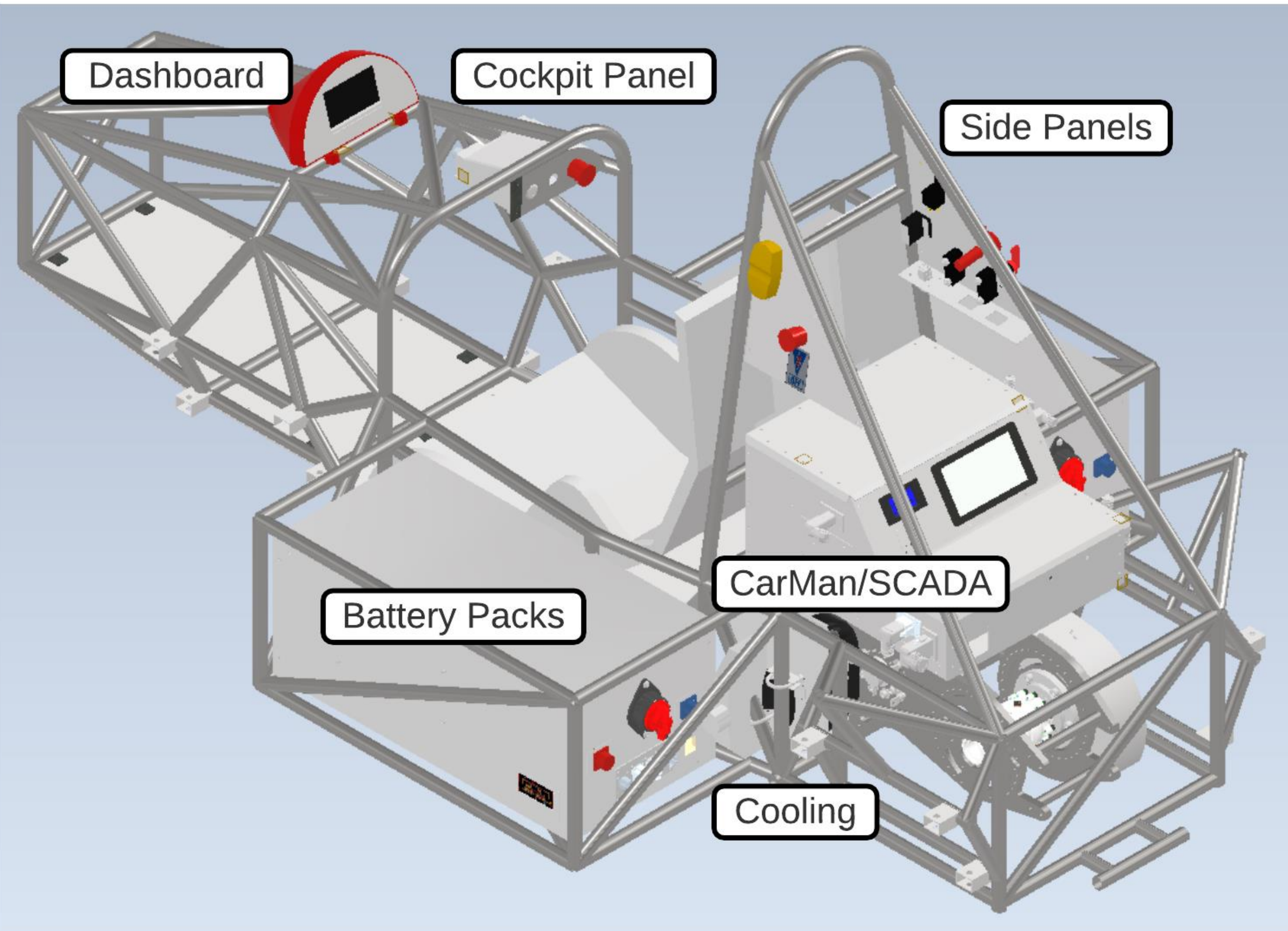


Figure 1 - "Sparky" Model with Major Electrical Subsystems

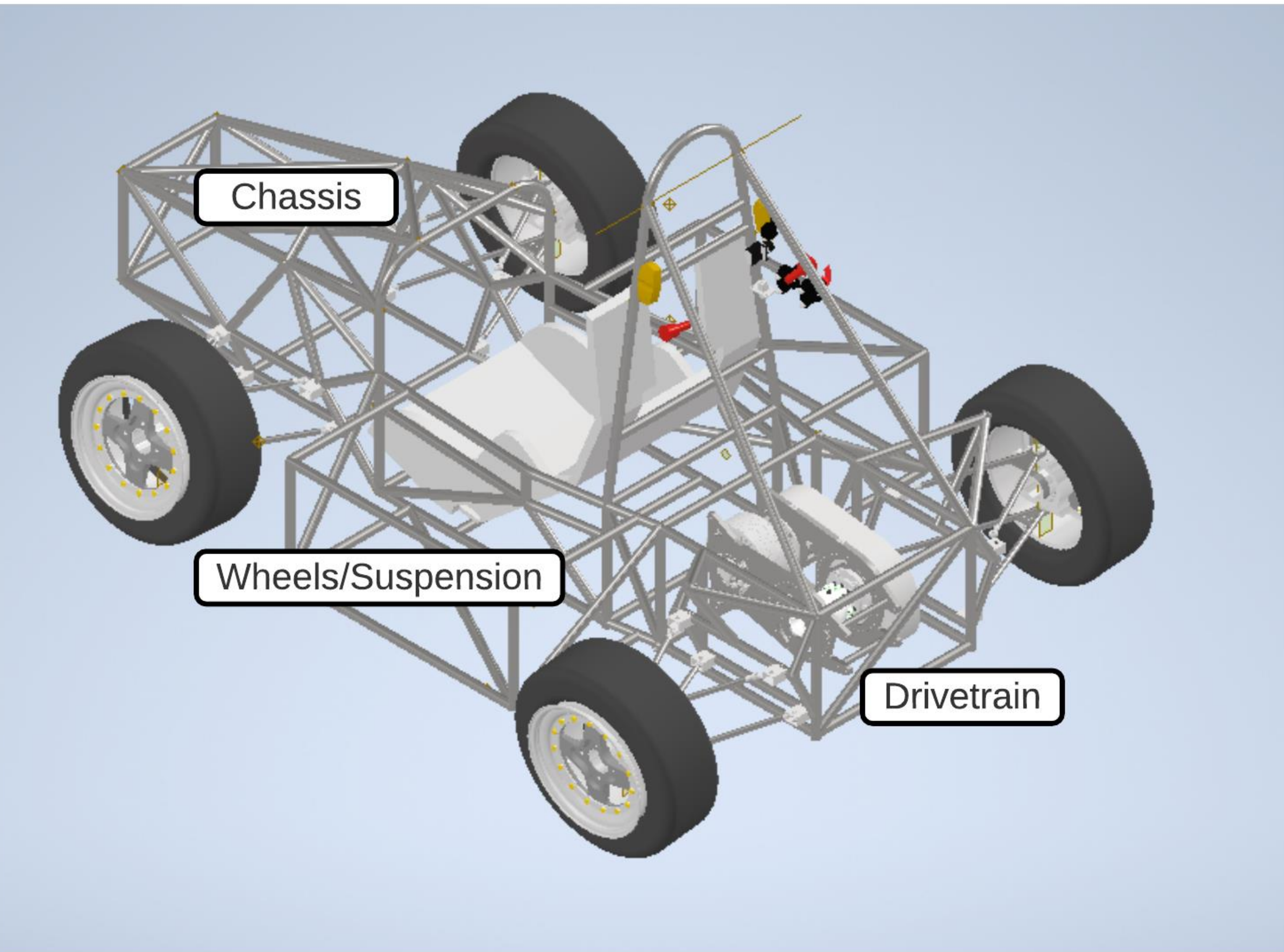


Figure 2 - "Sparky" Model with Major Mechanical Subsystems

Battery Packs

The house-made accumulator packs were iterated on this year by improving the battery management systems through the completion of a testing and demonstration system for both the cell manager boards and pack manager boards

Carman

The Carman system features an expanded enclosure to include the motor controller, and improved waterproofing. It is made of bent 3003 aluminum sheets. It also contains the TSI, GLV, Relay, and Logic boards that control most of the signals and power throughout the car's electrical systems.

Steering, Suspension & Brakes

The combined team working on the steering, suspension, and braking systems this year focused on redesigning their systems to accommodate the rear subframe rebuild and implementing the designs from previous years using parts already in the shop.

Cooling

The 2020-2021 cooling system was based heavily on the 2019-2020 design, with improvements made to increase modularity and effectiveness while remaining simple and inexpensive.

Drivetrain & Motor

The drivetrain enclosure this year was redesigned and assembled with the major goals of increasing stiffness and decreasing weight compared to previous designs.

Website QR

Scan this code to view the car on our website!

