



Sponsorship Proposal 2015-2016

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IOWA STATE UNIVERSITY **FORMULA SAE**
Iowa State University
2025 Black Engineering
Ames, IA 50011

What is SAE?

Formula SAE is a student design competition organized by SAE International. Each team must construct a prototype car as a company, focusing on the target market of the non-professional, weekend autocross racer. In addition, each student team must demonstrate their business skills by presenting the feasibility of engineering, manufacturing, and marketing these Formula racecars to representatives of the automotive industry. This gathering of the world's best engineering schools represents the largest engineering competition in the world with over 500 teams from 6 continents.

This year's annual Formula SAE Lincoln competition will bring together 80 collegiate teams from around the world to test their engineering, marketing, and business abilities in building a Formula SAE race car. These groups then compete in events such as marketing, cost, design, skidpad, autocross, acceleration, and endurance. The costs associated with competing at these prestigious events are very high; with team budgets averaging around \$50,000. Each team must raise the funds and materials necessary to build this race car.

Iowa State Formula SAE

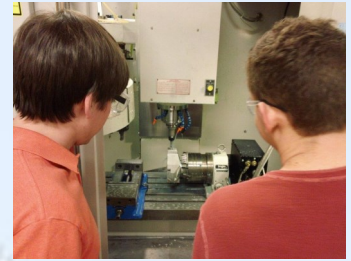
Cyclone Racing resides in the Nuclear Engineering Laboratory of Iowa State University in Ames, Iowa. We have built 20 race cars for the Formula SAE competition. Our long time involvement in this contest has allowed Cyclone Racing to evolve as a team and improve our product.

We continually alter our design criteria to better reflect the intention of the series, putting us on a winning path. We attribute much of our success to the generous cash, product, and service contributions from sponsors. Without our sponsors, our team would not exist.

Our Race Car

The Cyclone Racing team embodies some of the most advanced technologies in the automotive and racing world. Our race car features a custom made fuel injection system and a student tuned engine that burns E-85 fuel. We also design and fabricate our chassis and suspension in house, using some of the most advanced engineering software packages available in the industry.

Our race car's body is fabricated with ultra-lightweight composite materials and aircraft fabric. Currently, we are researching utilizing aerodynamic devices, increasing engine performance, and a variety of suspension changes.





Cyclone Racing History

2015 - 3rd Place "CR-20"

CR-20 is the first ISU car to implement an aerodynamics package since 2002

2014 - 16th Place "CR-19"

2013 - 40th Place "CR-18"

2012 - 47th Place "CR-17B"

2010 - 41st Place "CR-16"

2009 - 59th Place "CR-15"

2008 - 93rd Place "CR-14"

2007 - 8th Place "Smokey"

2006 - 7th Place "Lucky Seven"

2005 - 18th Place "Shrek"

2004 - 63rd Place "Aardy"

2003 - 22nd Place "Lucky"

2002 - 83rd Place "Homer"

"Homer" was ISU's first car utilizing a full aerodynamics package

2001 - 39th Place "Dick"

2000 - 55th Place "Al"

"Al" is most notable for its all aluminum chassis

1999 - 72nd Place "Little Red"

1998 - 63rd Place "Big Red"

1996 - 51st Place

1995 - 56th Place



CR-21 At a Glance

CR-21 is currently in the design phase and will compete at Formula North and FSAE Lincoln in 2016. The car will be similar to CR-20 as we will continue to evolve our designs. We are currently testing and validating CR-20 to improve our designs for CR-21. We are utilizing an AIM data acquisition system to collect and analyze performance data. This will help us to make better decisions to improve the design of CR-21 and future cars. The focus is weight savings, reliability, and to further reduce manufacturing time. This will allow us the time necessary to properly test, tune and train drivers before competition.



CR-21 Facts

Performance

- Top Speed: 85 mph (tested, red line limited)
- 0-60 mph: 3.9 sec (est.)
- 2.1 cornering g's

Engine

- 2014 Yamaha YFZ 450R
- 45 Horsepower (Intake Restricted)
- Student Built Fuel Injection System
- Student Designed 3D-Printed Intake Manifold
- Fuel Type: E85

Drivetrain

- Student Built JTEKT Torsen Differential Housing
- CNC Milled aluminum uprights
- 5-Speed Sequential Manual Transmission

Suspension

- Ohlins TTX25 MKII Dampers
- Double Wishbone Suspension Setup
- Unequal Length, Non-Parallel A-Arms

Dimensions

- Weight: 405 lbs
- Track Width: 45.5" Front, 50" Rear
- Wheelbase: 62"
- Overall Length: 105"

Controls

- Carbon Fiber Steering Wheel with Paddle Shifting
- Lightweight Tilton M/C's and Wilwood Calipers
- Adjustable Pedal Tray

Chassis

- Student Designed and TIG Welded
- 1020 Mild Steel Tubular Space Frame

Body

- Student Built Composite Nosecone and Sidepods
- Aircraft Fabric Wrap for Bodywork

Aero

- Carbon Fiber Wing Skins
- 3D Printed Internal Structure



CR-21 Project Budget

Final Drive

| | |
|------------------------|----------|
| Differential internals | \$445.00 |
| CV Joints | \$286.00 |
| Axles | \$740.00 |
| Rekluse EXP 3.0 Clutch | \$800.00 |
| Hardware | \$50.00 |

Subtotal \$2,321.00

Aero/Body

| | |
|--------------------------------|------------|
| Resin | \$400.00 |
| Carbon Fiber Fabric/Fiberglass | \$1,300.00 |
| Consumables | \$1000.00 |
| Hardware | \$300.00 |

Subtotal \$3,000.00

Electrical

| | |
|----------------------------|----------|
| StarkPower LiFePO4 Battery | \$250.00 |
| Wire and Buttons/Switches | \$175.00 |
| Connectors | \$200.00 |

Subtotal \$625.00

Data Acquisition

| | |
|--------------------------|-----------|
| Brake Pressure Sensor | \$300.00 |
| Linear Potentiometer(s) | \$600.00 |
| Tire Temperature Sensors | \$400.00 |
| Wheel Speed Sensors | \$340.00 |
| aiM Channel Expander | \$500.00 |
| aiM MXL 2 Dash | \$2000.00 |

Subtotal \$4,140.00

Competition Expenses

| | |
|----------------------------|------------|
| FSAE Lincoln Registration | \$2,050.00 |
| FSAE Lincoln Mileage | \$572.00 |
| FSAE Lincoln Hotel | \$1,472.00 |
| Formula North Registration | \$1,150.00 |
| Formula North Mileage | \$2,068.00 |
| Formula North Hotel | \$1,640.00 |

Subtotal \$7,312.00

Chassis

| | |
|------------------|----------|
| Steel Tubing | \$550.00 |
| Welding Supplies | \$150.00 |

Subtotal \$700.00

Suspension

| | |
|----------------------|------------|
| Dampers | \$2,600.00 |
| Springs | \$630.00 |
| Tires | \$1,200.00 |
| Wheels | \$1,400.00 |
| Hardware | \$150.00 |
| 7000 Series Aluminum | \$600.00 |

Subtotal \$6,580.00

Controls

| | |
|--------------------------------------|------------|
| Steering rack and quick disconnect | \$395.00 |
| Wilwood PS-1 brake calipers and pads | \$340.00 |
| Master cylinders (Tilton 77) | \$1,025.00 |
| Magura Hydraulic Clutch | \$150.00 |
| Pingel Electronic Shifter | \$1100.00 |
| Lines and Fittings | \$300.00 |
| Hardware | \$100.00 |

Subtotal \$3,410.00

Engine

| | |
|------------------|------------|
| YFZ 450R engine | \$2,500.00 |
| PE3 ECU | \$1,500.00 |
| Throttle Body | \$150.00 |
| Muffler | \$350.00 |
| Radiator and fan | \$200.00 |
| Materials | \$200.00 |
| Hardware | \$75.00 |

Subtotal \$4,975.00

Total \$33,063.00

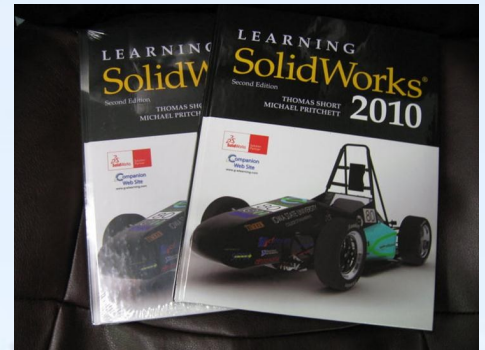


Sponsorship Benefits

In return for sponsorship support, Iowa State Formula SAE will promote our sponsors at all publicity events and races. We often promote our sponsors at conventions, tradeshows, and races at the regional and international level. Over the years, our cars have been exposed to hundreds of thousands of people around the country and internationally.

We have been featured in many newspapers, radio broadcasts, and trade magazines. Some of our recent media coverage includes:

- Iowa State Daily
- Ames Tribune
- WHO Radio of Des Moines
- Des Moines Register
- Automotive Engineering International Magazine



TOP: Cyclone Racing Formula Car along side Team Ethanol Car from the Indy Racing League. Cyclone Racing partnered with Team Ethanol to promote the use of ethanol. TOP CENTER: Cyclone Racing was featured on the cover of a Solid-works 2010 instruction manual. BOTTOM CENTER: Cyclone Racing participates in Iowa State University's VEISHEA parade. The parade is a timeless tradition attracting tens of thousands of onlookers each year. BOTTOM: CR-18 with Baja 2013 at an Iowa State football game.

Sponsorship Levels

Platinum | \$4,000+

- 12" Name/Logo on Trailer
- Prominent placement of name/ Logo on Race Car
- Name/Logo on Team T-shirts
- Dynamic Link to Your Website
- Framed Picture with Car & Team
- Sponsorship Plaque

Gold | \$2,000 - \$3,999

- 8" Name/Logo on Trailer
- Name/Logo on Race Car
- Name/Logo on Team T-shirts
- Dynamic Link to Your Website
- Framed Picture with Car & Team
- Sponsorship Plaque

Silver | \$1,000 - \$1,999

- 6" Name/Logo on Trailer
- Name/Logo on Race Car
- Name/Logo on Team T-shirts
- Dynamic Link to Your Website
- Framed Picture with Car & Team
- Sponsorship Plaque

Bronze | \$250 - \$999

- Name/Logo on Race Car
- Name/Logo on Team T-shirts
- Dynamic Link to Your Website
- Framed Picture with Car & Team

Donor | \$50 - \$249

- Dynamic Link to Your Website

Sponsorship Benefits

Not only does Cyclone Racing publicize our sponsors through logos on the car, shirts, trailer, and website, but we also provide our sponsors with a source of skilled engineers and business people. Iowa State Formula SAE provides valuable real-world experience to students on campus. Many companies choose to hire our students for their experiential education programs and for full-time careers including:

- Caterpillar
- Cummins
- 3M
- Honda
- Mercury Marine
- MoTec
- Nexteer Automotive
- Polaris
- Richard Childress Racing
- Oshkosh Defense

Iowa State Formula SAE is always on the lookout for additional support. In order to remain competitive, our team must seek the support of additional sponsors that can meet our growing needs.

In the past, sponsors have chosen to support us through:

- Cash Donations
- Part Donations
- Software Licenses
- Manufacturing Equipment Donations
- Design & Fabrication Services
- Marketing Support
- Material Donations

We cannot stress this enough: product and cash donations ensure the success of our program and allow for a greater chance of victory at competition. Without our generous sponsors, the team would cease to exist. We would like to thank our current sponsors for supporting our program and recent victories at competition.



TOP: Equipment Donations, like the TIG welder donated by Miller Electric, are the mainstay of Cyclone Racing's fabrication arsenal. CENTER: Material Donations, from companies such as Remmele Engineering and Alcoa help keep raw material stock adequate. BOTTOM: Product Donations, from companies such as 3M, Timken, and Igus, are instrumental to building and testing our race car.

Contact

For questions regarding Cyclone Racing or to make a donation, please contact:

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