About The Team

Design, Build, Test, and Race
Viking Motorsports is a student organization at Portland State University that competes in a yearly competition organized by the Society of Automotive Engineering (SAE). The goal of the team is to design, build, test and race an open wheeled, formula style race car. We then take our vehicle to the Formula SAE (FSAE) competition, which consists of several static and dynamic events that test the engineering ability, business capabilities, and the professionalism of the teams entered.

The Past
The Formula SAE team at Portland State began in 2002 as solely a mechanical engineering senior project. Each team of five members attempted to perform this daunting task in 10 month’s with a new group starting from scratch each year. During 2006, a group of students assembled the student group now known as Viking Motorsports in hopes of expanding the group beyond the senior capstone. This would increase the group size to include undergraduate engineering, business, and marketing students with the goal of creating a diverse team that better simulates real world. However, we welcome all majors to help better our team.

The Present
Sponsors are a key element in the success of Viking Motorsports. Although the university provides funding for our team to operate, we experience a serious budget shortfall each year. It is only with the generous donations from our sponsors that Viking Motorsports is able to undertake this task each year. We are very fortunate to have many returning sponsors this year and look forward to developing relationships with new companies. Our team is proud to assemble the majority of the parts in-house, our sponsors provide crucial materials, manufacturing capabilities, and funding. Sponsors are considered a partner with Viking Motorsports and receive several benefits:

- Increased recruiting access to graduating students of Portland State University.
- Media exposure at all Viking Motorsports events.
- Company publicity at SAE Competition.
- Representation throughout the Portland Metropolitan Area.
- Networking Opportunities with other Viking Motorsports sponsors.
- Contribution to the development of motivated and talented students.

The Future
This year will be our second year entering the Electric Vehicle (EV) competition. This is only the third year that FSAE has held an EV competition and this gives us a serious advantage over other teams for upcoming FSAE race series. The 2016 team truly operates more like a professional race team than a student group. The team’s commitment and organization is unrivaled and we have the utmost confidence that this year’s car will be very competitive. Our primary goal this year is to further develop the management and operation of the team. Ensuring that the team operates in a professional manner will not only enable us to produce a competitive car, but will also enable future teams to carry the team forward. This year’s design goals are reliability, ease of driving and performance. As none of our members are professional race car drivers, the car has to be accessible and easy to drive. Thus, a strong finish in this year’s event will come from a car that is reliable, easy to drive, and performance designed.
We are nothing without our sponsors. Viking Motorsports utilizes sponsorship funds and donations in every capacity of our operations. From analytical tools to good old-fashioned cash, our sponsors support us every step of the way. We’re always looking for new sponsors and rely on your support to do what we do. Viking Motorsports is the premier automotive group at Portland State University, offering an unparalleled educational opportunity for young aspiring students, but we can’t do any of it without your help. This year, we’re looking to increase sponsorship involvement, bringing you closer to the action at VMS and bringing both members and sponsors new opportunities.

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Formula SAE
The Formula SAE division is a global competition. The competition is a performance, design and business competition in which SAE student members conceive, engineer, fabricate, and compete with small formula style racing cars. The restrictions on the car frame and engine are limited so that the knowledge, creativity, and imagination of the students are challenged while adhering to a strict set of safety requirements. The annual competition that we attend takes place in June in Lincoln, Nebraska. Competition will be against approximately 100 other collegiate teams, all competing in several static and dynamic events.

Static Events
- Design – Students must justify the engineering decisions that were made
- Business Presentation – The team presents to mock investors the marketability to the “Weekend Racer” the ease of manufacturing the design
- Cost Report – Judges determine how well funds were utilized
- Technical Inspection – The car is rigorously inspected to ensure safe operating conditions and compliance with FSAE rules

Dynamic Events
- Acceleration – The vehicles straight line acceleration is measured
- Skid Pad – The race car’s cornering ability on a flat surface is measured
- Autocross and Endurance – The cars maneuverability and handling are evaluated and then the durability and reliability are tested
Internal Combustion Overview

Tires/Wheels/Brakes
Hoosier 20.0x7.0-13 R25B, 13x7” center-lock aluminum wheels
Targets: Separate brake sizing front and rear
Reduced rotational mass

Aerodynamics/Body
Composite body panels and aerodynamic side pods
Targets: Reduce drag, while creating a visually appealing race car

Cockpit/Controls
3-pedal system, push/pull actuated paddle shifters, formed foam seat
Targets: Create a driver interface that is easily operated and reliable.

Electronics/ECU
DTA fast ECU, simple custom dashboard, vehicle data acquisition system
Targets: Specific ECU tuning for each dynamic event

Dimensions/Weight
Wheelbase: 60” // Track: 48” Weight: 518 lbs
Target: Wheelbase 60” // Track: 46”
Weight: 470 lbs

Chassis
Frame construction: Tubular space frame.
Targets: 30 lbs lighter than 2014 car, design chassis with systems integration in mind

Suspension
Double unequal length a-arm, pushrod/pullrod actuated spring and damper, Penske 7800 non-adjustable shocks.
Targets: Optimized roll center, reduced under-steer, lower center of gravity, anti-roll bar integration

Engine/Drivetrain
Honda CBR F4i, 600cc 4 cylinder, Taylor-Race Torsion Differential, Rapid Prototyped Intake Manifold, Custom Muffler
Targets: 10lbs lighter than 2014 car.
**Motor**
Remy HVH 250 High Torque Motor with 78 kW peak output and machined aluminum motor enclosure
Future Development: scaled down, lighter, multiple motors

**Accumulator System**
Four Enerdel 31 Ah modules wired with two cells in parallel, 48 in series.
Future Development: Mount on chassis as low as possible for lowered center of gravity, custom sized battery pack for the exact energy needed to complete endurance.

**Motor Controller**
RMS PM100DX 3-Phase AC Motor Controller with a peak current of 350 Amps

**Chassis**
Frame construction: Tubular space frame.
Future Development: Weight reduction, shear panels and design chassis with systems integration in mind

**Suspension**
Double unequal length a-arm, pushrod actuated spring and damper, Penske 7800 non-adjustable shocks.
Future Development: Weight Reduction and Anti Roll Bars for front and rear with optimized roll centers

**Tires/Wheels/Brakes**
Hoosier 20.0x7.0-13 R25B, 13x7” center-lock aluminum wheels
Future Development: Separate brake sizing front and rear for reduced rotational mass, first 90% of braking regenerative done in software

**Dimensions/Weight**
Wheelbase: 60” // Track: 48” Weight: 750 lbs
Future Development: Wheelbase 60” // 46”, weight reduction and lower center of gravity
Contact Information

Sponsorship Information
Shastina Holmes (student - president)
burris2@pdx.edu
(503) 553-9572 cell

Viking Motorsports
Foundation Account (Viking Motorsports)
Attn: Viking Motorsports
1825 Southwest Broadway, Portland, OR 97201

Website
http://vms.groups.pdx.edu
facebook.com/VikingMotorsports
Email: psu.vms@gmail.com

Team Advisors
Dr. Etesami - Associate Professor
Design and Manufacturing Group
far@cecs.pdx.edu
(503) 725-3261

Evan Waymire - Professional Engineer
Industry advisor
evan@ccgmail.net

Bill Gellatly - Mechanical Engineer
Industry Advisor
bgellatly@msn.com