



## Solutions for the Motorsport Industry

Team Support

Software

Training



# Team Support: 20 years of experience at work for you

HELPING YOUR TEAM TO WIN THROUGH EXPERTISE

## RACE ENGINEERING

OptimumG delivers race engineering services by providing a dedicated engineer which is supported by OptimumG's team and experience. When hiring our race engineering services, you will not only have a race engineer working exclusively for your team, but also a team of supporting engineers and more than 20 years of experience at various racing series.

Our race engineering services are provided at very competitive prices, and with absolute confidentiality. Contact us for more information on how we can help your team win!



## PERFORMANCE ENGINEERING

OptimumG can aid clients in understanding the desired vehicle setup for a given track through our data analysis approach. Factors such as tire and brake wear and fuel consumption can be accurately predicted, which then can be used to design a race strategy. We can examine optimal settings for parameters such as tire setup, aerodynamic configurations, gearbox ratios and chassis setups. Below is the list of on-track services we provide:

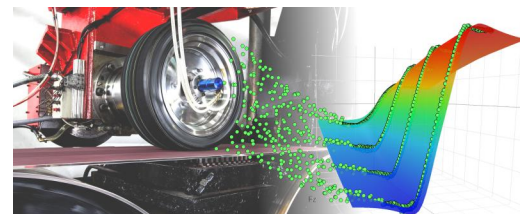
- Data engineering
- Performance engineering
- Race strategy
- Tire management



## TESTING

### Tire Performance

Extracting the best performance of your car requires that you use your tires in the most efficient way. OptimumG has more than 20 years of experience in tire testing, both on-track and in-lab. We offer a complete tire testing service package, which includes test preparation, execution, data analysis, tire modeling, and a detailed test report, with recommendations on tire setup and race strategy.



### Other tests

OptimumG has also an extensive experience in other vehicle tests. We can help your team plan and execute a test in most efficient way. After the test, we provide insights on how to post-process and analyze the test data, as well as how it can be used to improve the performance of your vehicle. Below is the list of test services we provide:

- 4/7 Post Rig
- Kinematics & Compliance
- Wind Tunnel
- Powertrain characterization
- Suspension components (springs, dampers, bushings, etc.)



## SIMULATION

If you don't know why you win, you will not know why you lose races.

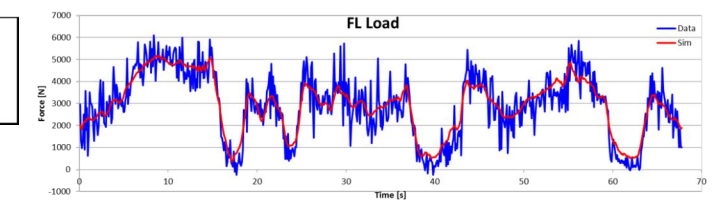
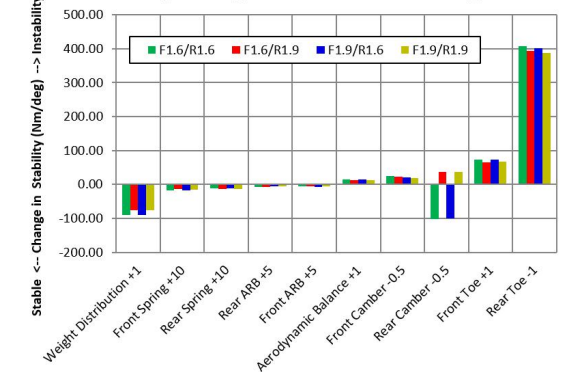
That's where OptimumG's simulation services can be useful for your team. Our simulation methodology not only provides insights on how to find the best setup for your car, but also gives you an overall understanding of your vehicle's dynamic performance.

Whether you just want to investigate changes on a specific subsystem or simulate the entire vehicle, OptimumG's computational tools will put an end to the "trial and error" and help you work more efficiently during the race weekend.

Tire pressure effect on vehicle balance at different speeds

	Low Speed			Med Speed			High Speed		
	17	20	24	17	20	24	17	20	24
Front IP [PSI]	-686	-27	-14	-837	-61	-234	-1660	-1130	-1661
Rear IP [PSI]	-703	0	-47	-755	0	-178	-515	0	-535
	-727	-25	-73	-785	-27	-205	-570	-54	-588

Stability Change vs. Parameter Change



OPTIMUMG CONSULTING SERVICES HAVE BROUGHT VICTORIES TO RACE TEAMS THROUGHOUT THE WORLD





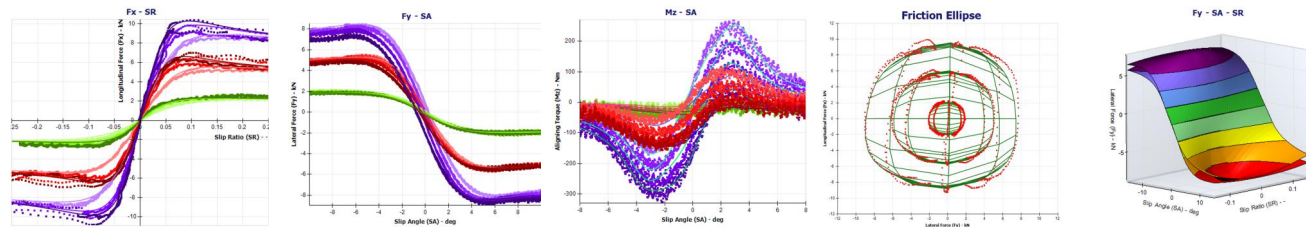
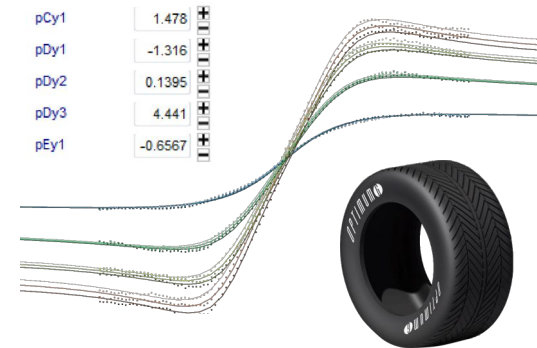
# Software: Make your work more productive

COMPUTATIONAL TOOLS DESIGNED FOR YOUR NEEDS

## OptimumTire

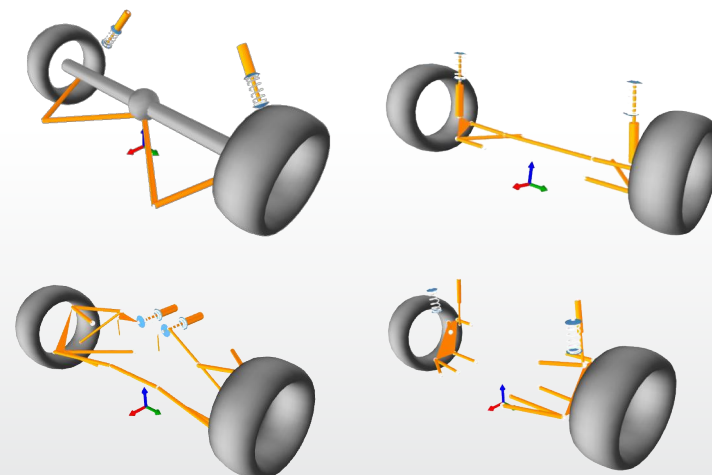
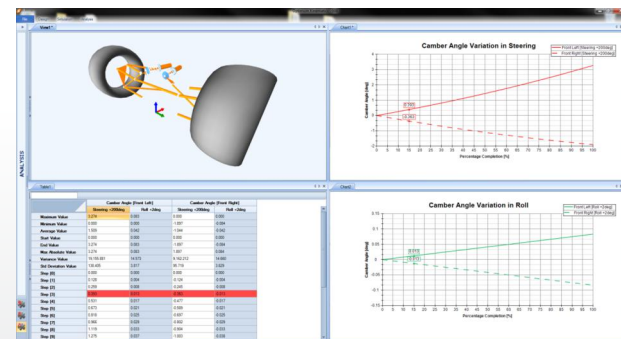
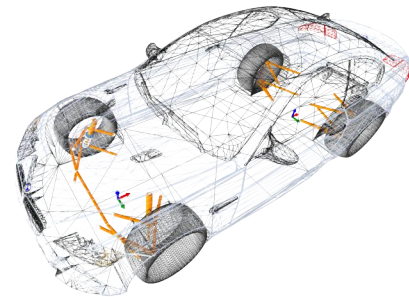
OptimumTire is a convenient and intuitive software package that allows users to perform advanced tire data analysis, visualization, and model fitting. The model fitting procedure is very fast and efficient partially due to the data processing tools incorporated into the software. You can either program your own tire model or choose from one of the pre-defined models:

- MF6.2, MF6.1, MF5.2
- Pacejka 2006, Pacejka 2002 w/ Pressure, Pacejka 2002, Pacejka 96
- Fiala, Harty, Brush



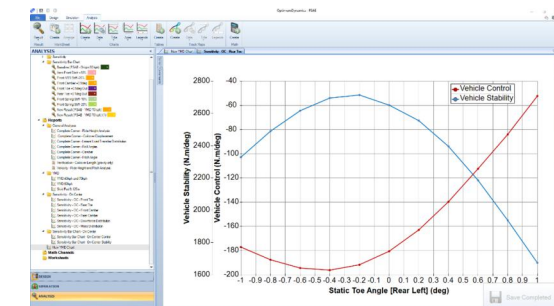
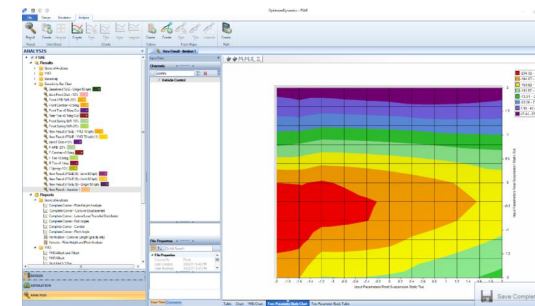
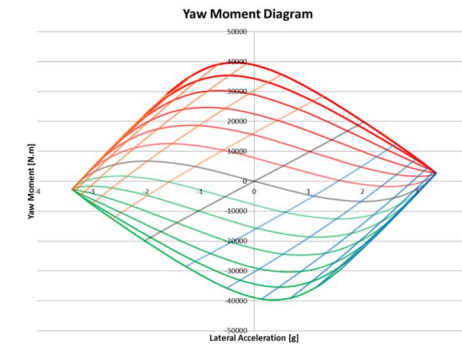
## OptimumKinematics

Designing and setting up a car is hard work. Kinematics software shouldn't be. OptimumKinematics is the suspension kinematics software developed by engineers after years of clients and customers asking car handling questions, and having similar challenges of suspension design. With a user-friendly platform, OptimumKinematics is the leading software for fastest, most efficient suspension design and analysis.



## OptimumDynamics

OptimumDynamics is the Computational Vehicle Dynamics software developed by OptimumG. It is a versatile tool which allows users to study any aspect of a vehicle's handling and performance characteristics. With OptimumDynamics, you can easily evaluate how different designs and setups affect vehicle performance from various perspectives. Our software has been validated on a wide range of vehicles, from racing prototypes to passenger cars.

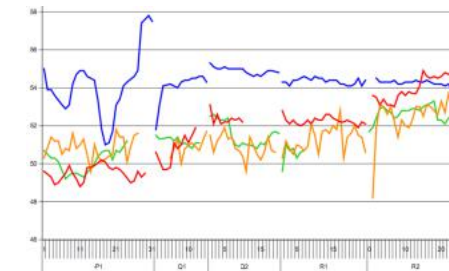


## CUSTOM SOFTWARE DEVELOPMENT

OptimumG has a strong history of creating software programs that help automotive companies with their vehicle dynamics and data acquisition needs. Rather than sifting through numerous spreadsheets, let OptimumG help you organize your data and formula needs by creating custom software programs for your organization. Send us your problems, we'll send you a solution.

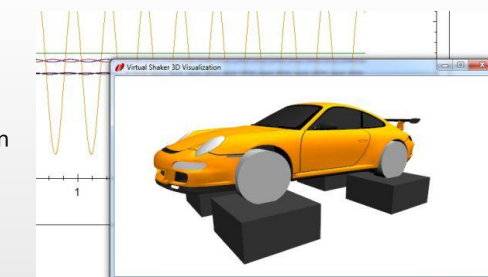
### Data Analysis Database

Many of our clients need systems that go beyond the basic capabilities of data analysis software to obtain more information about their car and driver. We have developed specific database packages that store and display "key performance indicators" over a testing session, an event, a season, or multiple years.



### Hardware in the Loop

For those teams that are in need of precise application, hardware in the loop methods can be used to calculate or display live values as they are obtained from a data acquisition system. An example of this is a Tire Force Calculator, which computes forces and moments live based on slip angle sensors and a vehicle model.





# Training: Obtain the knowledge you need

WORLD-CLASS TRAINING IN VEHICLE DYNAMICS

## PUBLIC SEMINARS

OptimumG seminars are held worldwide throughout the year. Check out our seminar calendar at [seminars.optimumg.com](http://seminars.optimumg.com).

### Applied Vehicle Dynamics

The Applied Vehicle Dynamics seminar is internationally recognized as one of the best sources of knowledge in vehicle dynamics for engineers. During four days, seminar participants have the opportunity to acquire the skills and knowledge they need to succeed in their projects. Whether it's about the design of a new car concept or the exploitation of an existing one, this seminar focuses on applied vehicle dynamics to car design, simulation, manufacturing, preparation, testing, and development.

Seminar topics include:

- Vehicle dynamics fundamentals
- Tires forces and moments, testing, and modelling
- Steady state behavior basics
- Vertical, lateral, and longitudinal dynamics
- Aerodynamics
- Transient vehicle dynamics
- Kinematics and compliance
- Simulation
- In-lab and on-track testing
- Simulation validation and benchmarking



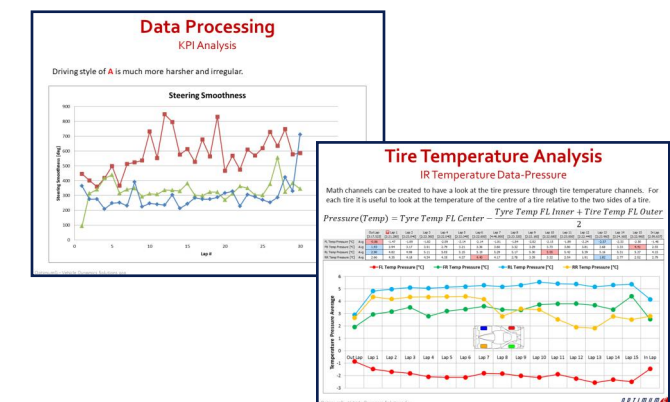
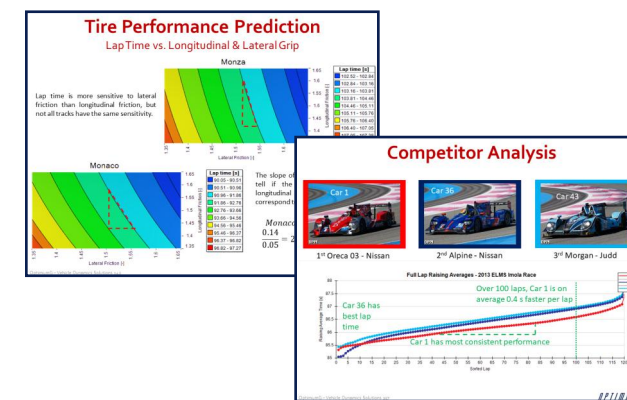
### Data Driven Performance Engineering

Success in today's racing industry requires more than experience and vehicle dynamics knowledge. Engineers must be able to efficiently process large amounts of data coming from a wide range of sources to support decision making. Consistently making the right decisions in short time frames is what separates successful teams from the rest. This seminar will cover the essential tools and methods that are required to process the data required to constantly improve the performance of a racecar.

The Data Driven Performance Engineering seminar combines theory with hands-on exercises to reinforce methodologies. Seminar participants are encouraged to bring their own laptops to run some of the exercises.

Seminar topics include:

- Workshop measurements
- Bench testing and Lab testing
- Modeling and Simulation
- Data acquisition hardware
- Driver evaluation through Key Performance Indicators
- Vehicle evaluation through Key Performance Indicators
- Data analysis techniques
- Tire management
- Team organization



## OPTIMUMG SEMINARS ARE GIVEN IN VARIOUS COUNTRIES WORLDWIDE

Here are a few examples:

### Canada

- Open to public Data-Driven Performance Engineering seminar



### France



- Open to public seminars
- Both seminars are held every year
- Attendees range from experienced engineers to university students

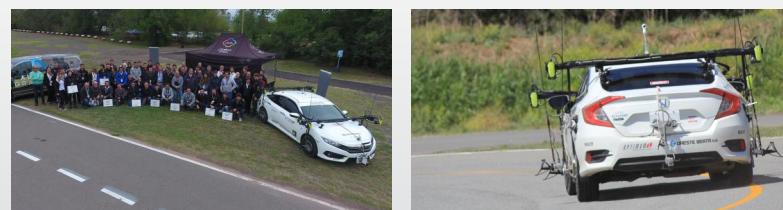
### Germany

- Open to public Data-Driven Performance Engineering Seminar



### Argentina

- Vehicle Dynamics Seminar and Demonstration
- Professionals from various car manufacturers and automotive suppliers
- Live demonstration of Vehicle Testing and Data Analysis



### Japan

- Open to public Applied Vehicle Dynamics seminar



## ABOUT US

Established in 1997, **OptimumG** offers **consulting services, simulation software, and training solutions** to the international car manufacturing and racecar industry. The company is currently a world industry leader, providing services to help clients in any aspect of car/tire development and design, vehicle and component testing, simulation, and much more.

At **OptimumG**, we have the **engineering expertise, knowledge, and perspectives** to provide automotive engineers with the continuous performance their organization is striving to achieve!

## CUSTOMERS

We have helped teams win races and championships in various racing series around the world



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