

One-Day Seminar Featuring Claude Rouelle October 25th • 8am-5pm

The Successful Race Car Driver and His Engineer. How Their Combined Work Make Them Winning.

Why this seminar?

This one day seminar has been designed for amateur, semi-professional and young "rising-star" race drivers and race technicians who want to improve their performance by

- Acquiring a better understanding the basic of racecar engineering, car setup and car tuning.
- How to improve their organization, their efficiency and their communication with their engineers during testing and race week end
- How to improve their driving skills with new methods such as data acquisition and mental training.

The seminar presenter

Claude Rouelle is a high performance and racecar designer, research and development engineer with 25 years of experience in design, test and racecar engineering in Europe, Australia, Japan and since 1993 in USA.

During his career, Claude worked as a race engineer, a technical adviser and manager on dozens of circuits and rallies with several drivers in F1, CART, Indy Lights, Formula 3, Formula 3000, ALMS, NASCAR, Touring Cars, Australian V8 Supercar.

Claude earned his masters degree in industrial engineering from the Institut Gramme, Belgium in 1978. His thesis for which he got the highest distinction possible was about the design and construction of a formula car and its test in a wind tunnel.

In 1997, Claude created OptimumG, a consulting company that also teaches race car engineering and data acquisition to individuals and small groups through seminars organized worldwide by MoTeC, a world leader in data acquisition systems. Claude also puts on seminars for companies like Ford, GM, DaimlerChrysler, Goodyear, Michelin, AP Racing, Dynamics, and several high performance and racecar components manufacturers.

In parallel with his consulting and seminars activities, during 25 years on world circuits Claude has always believed in the importance of understanding and improving the interconnection between racecar performance and racecar driver performances, particularly the driver the physical and mental training, his communication with his team and especially his engineers.

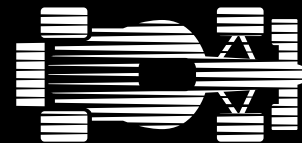
- **Continental Breakfast Courtesy of Harrison Auto Dynamics**
- **Lunch Courtesy of Quizno's**

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Seminar Detailed Content

0 Introduction

- 0.1 Being a driver in 1984 and 2004. What are the differences?
- 0.2 The conditions imposed by modern racing
- 0.3 What makes a successful race car driver
- 0.4 What makes a successful racing team

1. Winning starts at the shop.

- 1.1 Car reliability check
- 1.2 Car measurements and setup parameters matrix
- 1.3 The setup procedure
- 1.4 Racing with and without data acquisition
- 1.5 Basic data acquisition choice
- 1.6 Basic data acquisition calibration
- 1.7 Know the technical and sporting rules.

2. Understanding the 101 of handling: race tire and weight transfer.

- 2.1 Tire Grip and Vertical Load.
- 2.2 What weight transfer is not.
- 2.3 What weight transfer is.
- 2.4 Understeer and oversteer definition.
- 2.5 Tire grip and tire efficiency
- 2.6 Tire grip and lateral weight transfer.
- 2.7 Tire grip and in-line weight transfer
- 2.8 Understeer and oversteer correction with suspension adjustments
- 2.9 The dilemma between balance and maximum grip
- 2.10 The car performance and the driver's perception of the car performance.
- 2.11 Self-aligning torque and lateral tire force vs. slip angle.
- 2.12 90% of the corner time is in the first 10%.

3 How each setup parameter does influence the car handling.

- 3.1 Weight distribution
- 3.2 Tire pressure and tire temperature
- 3.3 Ride Height
- 3.4 Caster
- 3.5 KPI
- 3.6 Camber
- 3.7 Toe
- 3.8 Wings and Gurney
- 3.9 Spring
- 3.10 Antiroll Bars
- 3.11 Shocks
- 3.12 Kinematics: camber changes, roll centers, antidive and antisquat.
- 3.13 How to read the tires.
- 3.14 Conserving fuel and tires.

4 Driver Testing, Practicing and Racing Habits

- 4.1 The driver as one team member
- 4.2 The driver needs a clear understanding of the team goals and culture
- 4.3 The team needs a clear understanding of the driver goals, character, ambition & engineering education
- 4.4 The driver and his relationship with the owner, manager, mechanics, partners, sponsors, fans, race administrators and race technicians.
- 4.5 The driver and his relationship with the engineer
- 4.6 Right-brain and left-brain driver.
- 4.7 Driver skills and talent. Mental training.
- 4.8 Who need to adapt to the other: the engineer, the driver, both?
- 4.9 The driver and its understanding of the car
- 4.10 How to sense the car.
- 4.11 Effect of driving style on a car, qualifying versus race.
- 4.12 Winning is the final destination. Racing is the journey.
- 4.13 Why do you race?
- 4.14 How to measure if you have reached your objectives
- 4.15 What if you don't
- 4.16 The importance of having fun.
- 4.17 The difference between goal and challenge.
- 4.18 Emotion is the # 1 enemy
- 4.19 Be aware: the many parameters that do influence the lap time.
- 4.20 Get Real: "If (...) then we could have been quicker". Never believe in the "ifs"
- 4.21 The lap time is the only number that never lies.
- 4.22 Focusing on the best you can do.
- 4.23 Race logistics and scheduling: Hotel, plane, rental cars etc.
- 4.24 Pit installation
- 4.25 Mechanics pre test and pre race jobs
- 4.26 Pre race meeting
- 4.27 The pre race comments and suggestions
- 4.28 Each man has his tasks; each task has his man

- 4.29 The "who-does-what" sheet in the paddock
- 4.30 The "who-does-what" sheet in the pit
- 4.31 The "who-does-what" sheet during the pit stops.
- 4.32 Walking the track both ways: hills, bumps, puddles, grass, height differences, overtaking, places to go off.
- 4.33 Analyzing and remembering the track
- 4.34 The track map
- 4.35 For a moment forget about the others lap time
- 4.36 For a moment forget about your own lap time
- 4.37 Making one with your car
- 4.38 The double role of the racing driver.
- 4.39 Driver pure performance.
- 4.40 The 3 types of performance: lap time, consistency, and smoothness.
- 4.41 Focusing, feeling, memorizing and reporting the car behavior to the engineer.
- 4.42 Creating the game plan: first thing first
- 4.43 Who is in charge? Testing, Practicing, Qualifying, Race.
- 4.44 Driver, Engineer, Manager: you can be all three but it is not going to be easy!
- 4.45 The importance of the briefing.
- 4.46 The briefing form
- 4.47 Think out of the box.
- 4.48 Attitude. Drive what you have.
- 4.49 Make a choice: Testing or Practicing?
- 4.50 What to do, why you want to do it and who does it.
- 4.51 Priorities in set-up modifications.
- 4.52 The very first thing to look at: your tires pressure and your tire temperatures
- 4.53 One change at a time
- 4.54 The setup sheet
- 4.55 The testing sheet
- 4.56 Write down everything!
- 4.57 Engineer's work and thoughts process while the driver is on the track
- 4.58 Radio driver's comments about the car to the engineer while on the track.
- 4.59 Radio driver's comments about the car to the engineer in the pits. Test days.
- 4.60 Radio driver's comments about the car to the engineer in the pits. Race days.
- 4.61 The pit board
- 4.62 Have solutions ready before you even know the car problem.
- 4.63 The set down sheet
- 4.64 The tear down sheet
- 4.65 Achieve less but achieve sure
- 4.66 Functionality, reliability and cockpit ergonomics
- 4.67 Corner per corner car handling description
- 4.68 Corner segment per corner segment car handling description
- 4.69 Handling change with driving style change.
- 4.70 Handling changes lap by lap,
- 4.71 Lap time changes with tire wear and fuel load.
- 4.72 Using data acquisition during the test or the race.
- 4.73 The importance of the debriefing
- 4.74 The debriefing room
- 4.75 The debriefing form
- 4.76 Using data acquisition during the debriefing.
- 4.77 Understanding the driver before understanding the car
- 4.78 Mechanics post test or post race jobs
- 4.79 The mechanics' job list
- 4.80 The importance of order of the mechanics tasks.
- 4.81 Radio communication Tips and Tricks
- 4.82 The pre race briefing
- 4.83 The critical minute before the start
- 4.84 Race strategy.
- 4.85 Observe other racers. Starting procedures and circuits.
- 4.86 Pit stops and pit stop training
- 4.87 The after race debriefing
- 4.88 The importance of test and opposite test
- 4.89 The track and weather conditions changes and the lap time.
- 4.90 The after race comments and suggestions.
- 4.91 Vehicle inspection. Tech and stickers.
- 4.92 Drivers and girl friend (or wife) on a circuit
- 4.93 Drivers, family and friends on a circuit
- 4.94 Drivers and journalist on a circuit
- 4.95 Drivers and sponsors on a circuit. Finding and keeping them.
- 4.96 Dress code.
- 4.97 Drivers at the hotel
- 4.98 Nutrition during a race meeting.
- 4.99 Nights before and after the race.
- 4.100 Refocusing during the season
- 4.101 The driver and his ability to motivate the team members.
- 4.102 Does the driver need a laptop?
- 4.103 Reports: after race, after testing and pre-race suggestions.