

Grand Prix Online Car Development 2011

In 2011 Grand Prix Online will introduce a unique system of car development and realistic engine wear to the World Championship to further enhance the experience of Grand Prix racing.

1. Engine Management

Each team is allocated 8 engines per season which will be closely monitored by the league administration. All engines start life with 100% performance and as close to 100% reliability as the manufacturers can make them. As in real life an engine will suffer damage and wear and tear during the course of a grand prix weekend.

This is simulated in the following manner;

An engine will lose 10% of its reliability after each grand prix event it is used for. This will mean that for a 2nd event the engine will only be 90% reliable and the chance of a failure increases slightly. A 3rd race will see this number drop to 80% and so on until the team decides to change the unit used in the car.

The result of this rule is that teams will have to manage their engines over the course of a season as some engines will incur more wear than others. Will a team choose to run a 4th race on one engine and push the limits of reliability that much further? In doing so the team leaves itself a fresher engine for races such as Monza, Silverstone and Spa Francorchamps. Managing engine boost within a race environment will become of greater importance as well as the radiator size. Running a more conservative engine system to safeguard against failures will inevitably result in the car being slower in a straight line. How will your team strike the balance and use engine strategy to your favour?

The engine statistic is shared by both drivers of a team so an engine at 70% reliability will be used for both cars and not just one. This is to promote greater team play and encourage drivers to work together more in testing to ensure their car is in the best shape possible for the upcoming event. At any stage a team may request an engine change to a fresh unit or back to a unit that has already used in past events. The team badge on the forum and website will show the status of the current engine being used in that teams cars.

2. R&D Car Upgrades

We will utilise a system of research and development that will allow teams to build on their success and improve their vehicle in a number of ways. R&D points will be gained for consistent performances throughout Free Practice, Qualifying and the Race. These points can then be spent in a number of ways to develop your car. Again, these are team points and are accumulate for the team and not a specific driver. Any upgrades will also be applied to both cars and not individuals. The hope is that this will again improve team play and a level of strategic thought and planning to outsmart your rivals in the R&D department.

R&D development points are scored as follows:

- a. Lap Completion
 - i. *Team Completes 100% of Race Laps / 20 R&D Points*
 - ii. *Team Completes 75% of Race Laps / 15 R&D Points*
 - iii. *Team Completes 50% of Race Laps / 10 R&D Points*
- b. Drivers crossing the line to complete a race will be awarded the full R&D points regardless of whether they were on the lead lap; they have completed the race.

The maximum a team can score in one weekend is 20 points or a maximum yearly total of 400 R&D points.

R&D points can be spent on improvements to the cars in one of 3 areas;

- a. Aerodynamics / Level 1, 2 & 3
- b. Braking / Level 1, 2 & 3
- c. Tyres / Level 1, 2 & 3
- d. Engine / Level 1, 2 & 3

Each step costs 40 R&D points. To upgrade all areas of one specialisation would cost 120 R&D points. This will make it difficult for any team to fully upgrade all areas so a degree of strategy and specialisation will be required.

3. Upgradable Components

With each upgrade you will obviously gain an advantage in your chosen area of development; think of this upgrade as a 5% improvement. This will also be offset by a slight negative effect on the car, think of this negative as a 2% deficit.

Specific examples are contained within the individual areas of improvement. An example here is an upgrade to braking would give you improved braking ability, but at the cost of brake wear; you can brake later and harder but the materials involved will suffer slightly due to the experimental nature of the brake and so brake temperatures must be managed during the race.

Below you will find details of how upgrades in each area will affect the performance of the car;

Please note that values are not culminative, they are on top of the standard value rather than added to the previous upgrades value.

a. Aerodynamics

Level 1: 5% Additional Peak Diffuser Downforce & 5% Increase in Fuel Consumption

Level 2: 5% Additional Peak Diffuser Downforce & Improved Stall Characteristics & 8% Increase in Fuel Consumption

Level 3: 5% Additional Peak Diffuser Downforce & Further Improved Stall Characteristics & 10% Increase in Fuel Consumption

b. Braking

Level 1: Reduce Temperature Variations by 50% & 120% Brake Pressure Available

Level 2: Reduce Temperature Variations by a further 50%

Level 3: Reduce Temperature Variations by a further 50%

c. Tyres

Level 1: Minor Suspension Geometry Adjustment Giving 15% Less Tyre Wear

Level 2: Medial Suspension Geometry Adjustment Giving 25% Less Tyre Wear

Level 3: Major Suspension Geometry Adjustment Giving 30% Less Tyre Wear

d. Engine

Level 1: 1% Power Increase & 4% Increase in Fuel Consumption

Level 2: 2% Power Increase & 8% Increase in Fuel Consumption

Level 3: 3% Power Increase & 12% Increase in Fuel Consumption

4. Summary

R&D points can be spent however the individual teams see fit but they must inform the league administration of how they will spend their points so that the required physics changes can be made and implemented.

In order to accurately simulate the grand prix season teams will be unable to apply upgrades until they return from the fly-away races. This means that the gap between the fourth and fifth rounds of the championship will be the first time in which teams are able to apply their upgrades. After this point however, teams will be able to install upgrades in between any grand prix event as long as they have the required R&D points available to do so; however, after an upgrade has been purchased, teams will be unable to purchase further upgrades until two races have passed.

We hope that this system will introduce many forms of strategy throughout the year as teams fight to out develop and outsmart their rivals not only on track but in the factories as well. Will you go for the latest tyre compound development knowing that you may need to make an extra pitstop? Will you go for that overtaking move, knowing your brakes will allow you to brake later but you may have to pay the price later in the race to avoid potential failure? Who knows; but we hope it will be fun finding out.