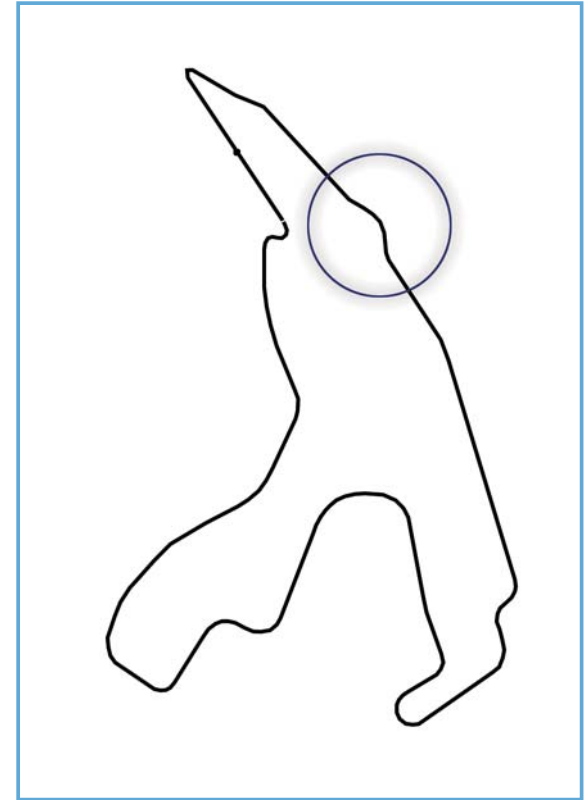


Advanced Circuit Driving Techniques Article 3:

Eau Rouge corner: giving it to you straight!

**Video analysis shows how to gain a second through
one of the best corners in the world**

As one of the world's most complex fast corners, Eau Rouge is revered by racers. Drivers know that you must take Eau Rouge flat to take advantage of the available down-force and gain speed onto the Kemmel straight. What many don't realise is that the straight is a kilometre long, with a 70m uphill climb. If you don't get Eau Rouge right you've lost vital time.





For the fourth in our article series discussing circuit driving techniques, we asked racing driver and instructor Nigel Greensall to give us his tips on how he tackles the famous corner to gain the most speed up the straight.

Nigel took some data from a practice run in a FunCup race car, featuring one of his laps and a comparison lap from his team mate Dirk (a very proficient racing driver) in the same car. FunCup cars are single seater race cars based on VW Beetles. They're ideal to analyse different driving techniques because with their 160bhp engine and inefficient aerodynamics, it's even more important to perfect driving technique because there is little power to rely on.

At the same time, if you are racing a Radical or even an F1 car the principles discussed are just as applicable.

We start our discussion from the exit of La Source, and follow the circuit through Eau Rouge and to the end of the Kemmel straight, where Nigel has gained a whole second over his team mate, despite Dirk actually having a faster time in the entrance to the section.

So how did Nigel gain a second on this corner using the same car?...



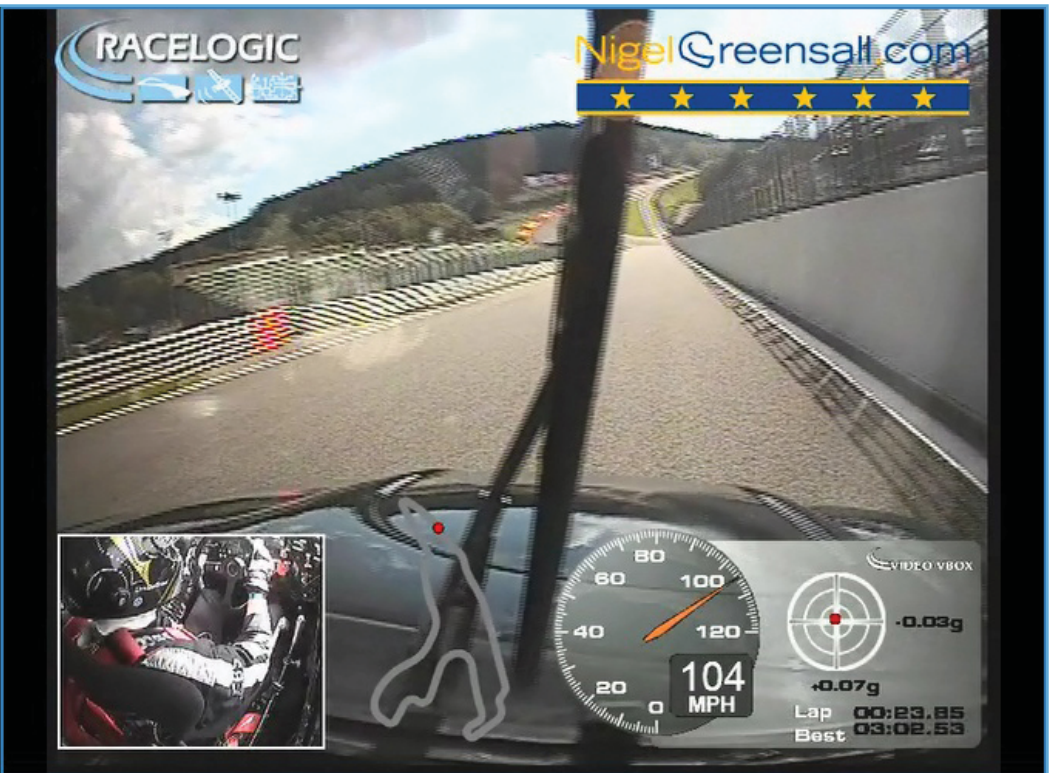
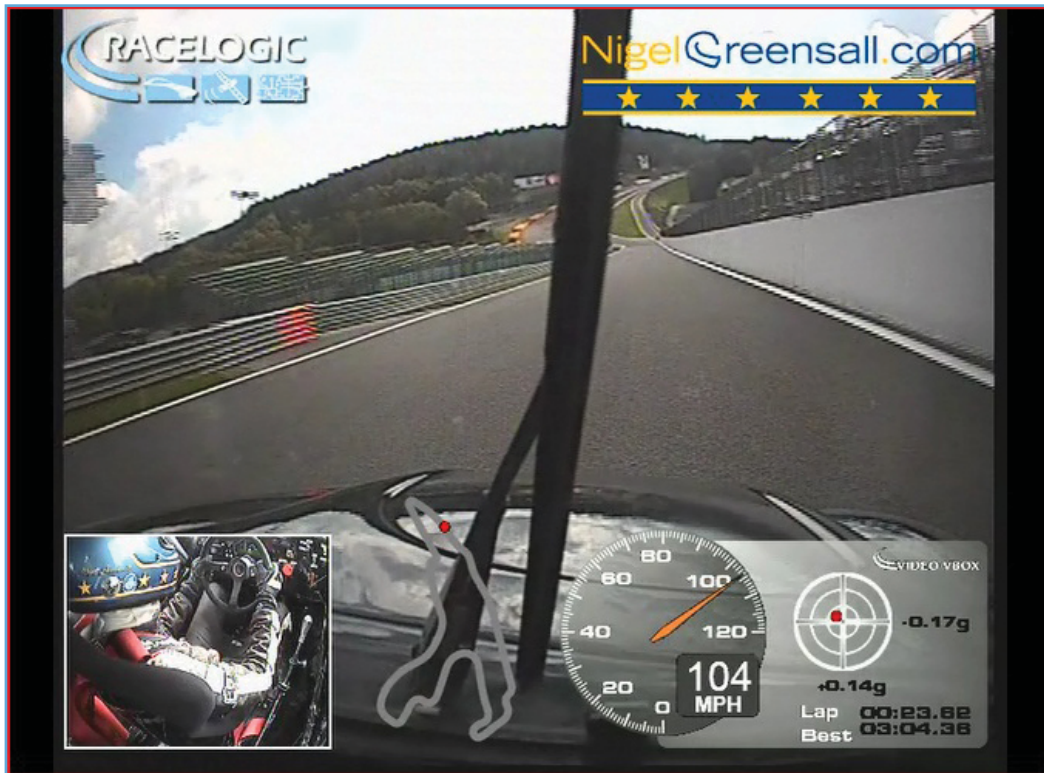
The straight from La Source

Nigel Greensall: "In the comparison screenshot, you can see that Dirk (in the right hand screenshot with the blue outline) is actually going 3mph faster than me, coming out of La Source with good speed. He's just 0.2s behind me up to this point.

However in an attempt to set himself up for the upcoming Eau Rouge, he goes too close to the wall on the right, whereas I stay in the middle of the track.

I positioned my car in the middle of the track for 3 reasons:

- To lessen the drag effect of the concrete wall – the closer to the wall you drive the more drag you encounter with the air bouncing back at the car and slowing you down
- To take advantage of the increased grip between the grid-lines
- To gain better visibility (you can see far more of the approaching section from my view at the centre of the track), to help anticipate any incidents

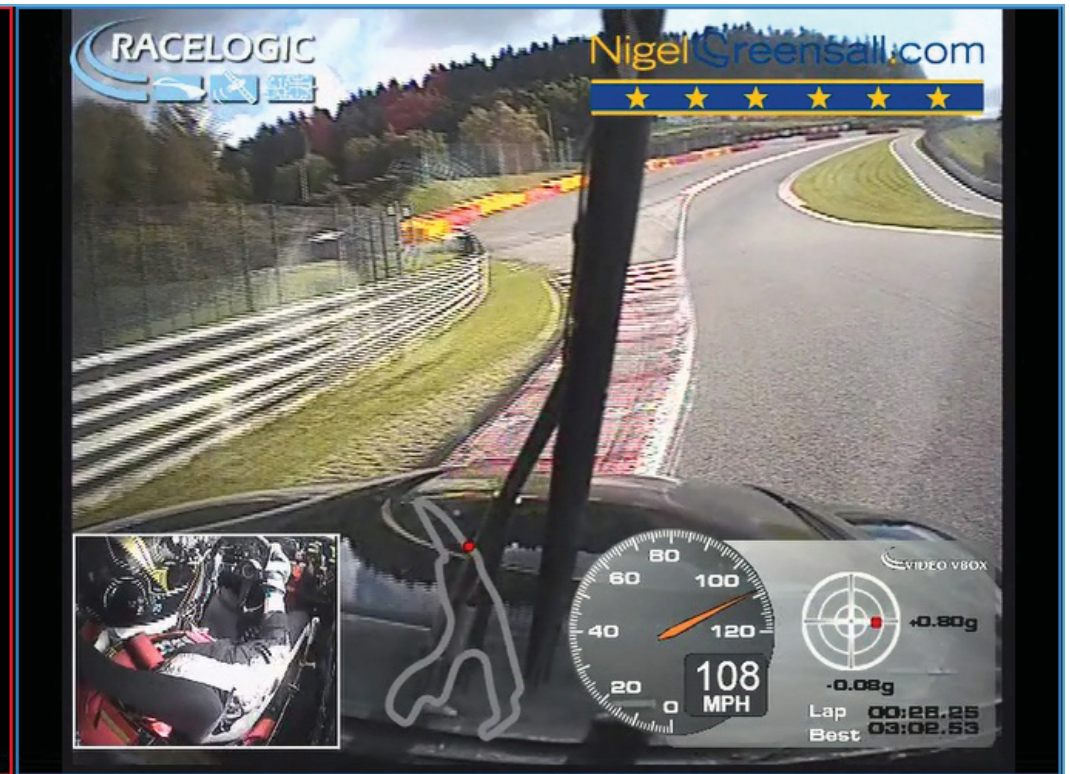
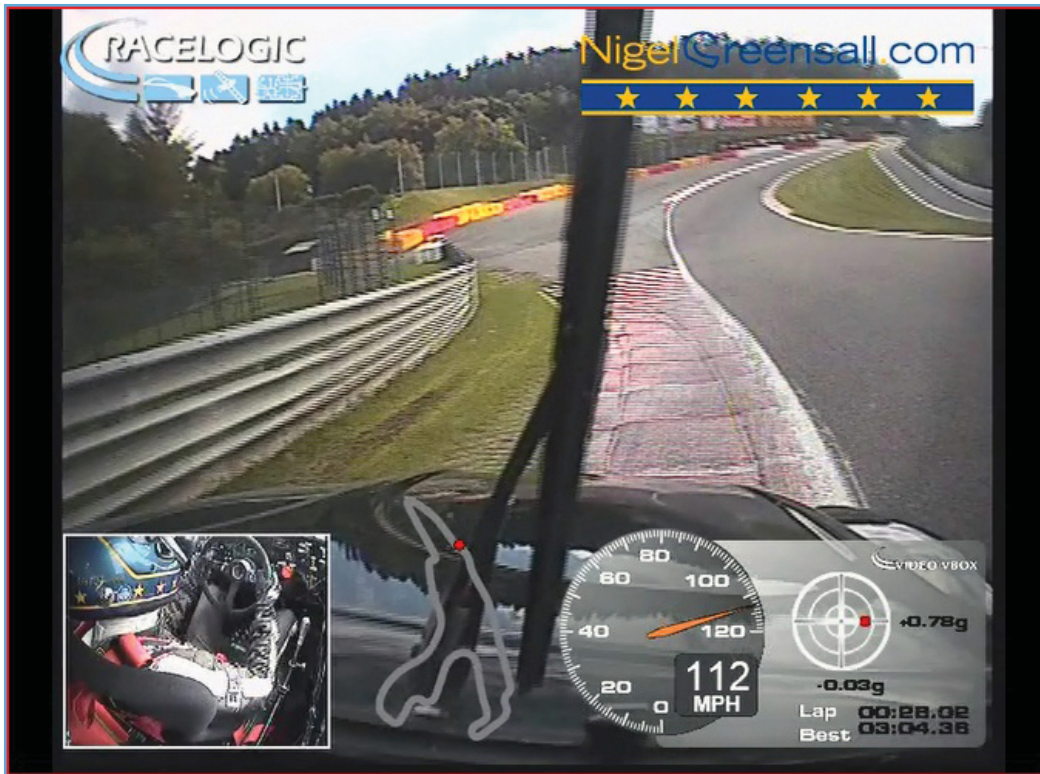


The approach to Eau Rouge

As you can see from the screenshot, in the approach to Eau Rouge my speed has now caught up with Dirk's and I am accelerating quicker, with 0.14g as opposed to 0.07g. This is because I have encountered less drag from the wall, but this is where I start to edge towards it to gain space.



Having gone very close to the wall, my entry onto Eau Rouge is now as wide as possible. This means I need to turn less sharply than Dirk which will help to maintain more speed. From my car you can see that the two apexes are lining up, showing a straight route from the first apex to the second.

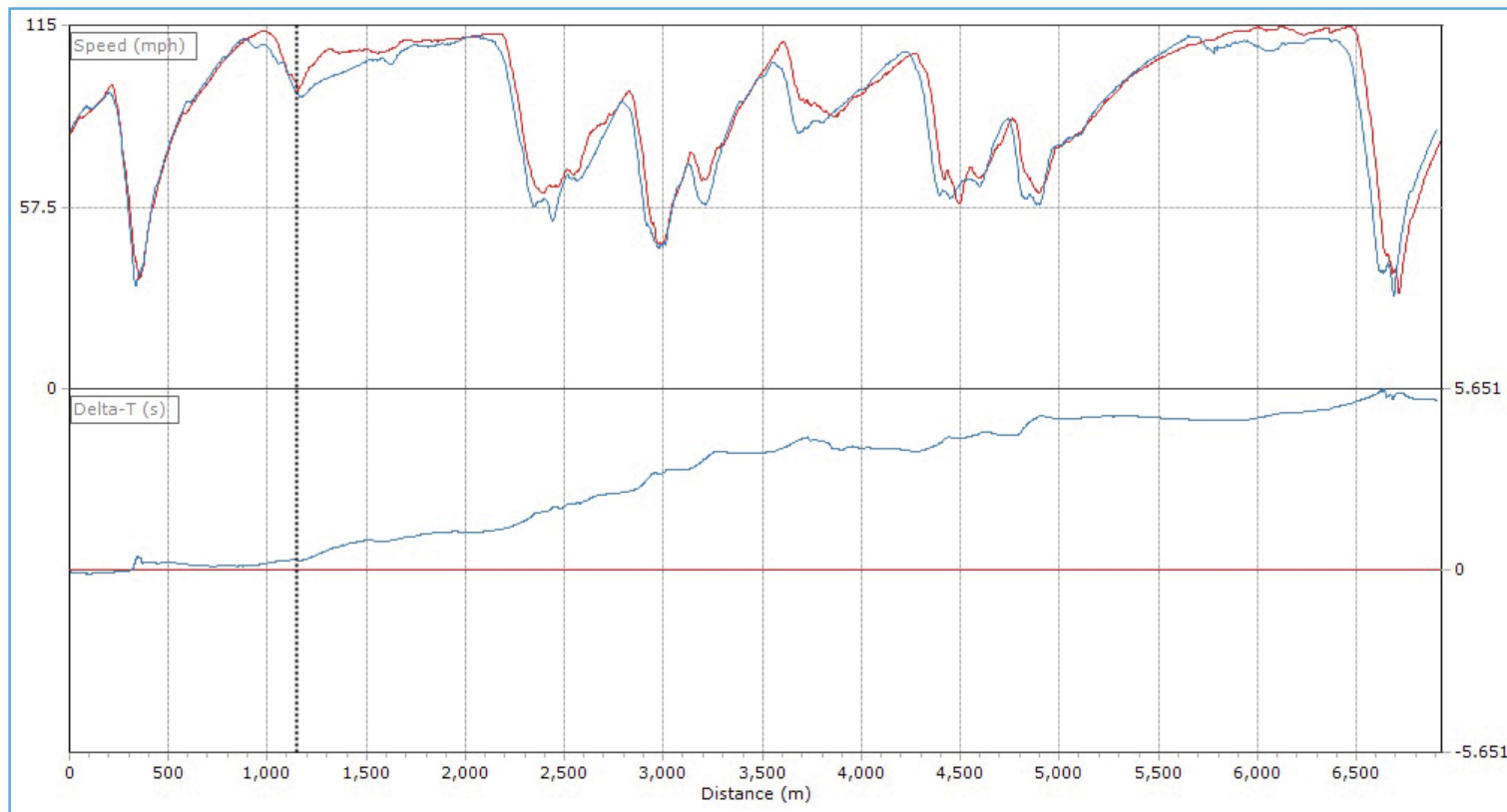


The first apex of Eau Rouge

The differences in track position are very clear here. I am cutting the corner as much as possible with just two of my wheels still on the track and the other two on the concrete strip beyond the curbing.

The line I have taken is less sharp than Dirk's (right), which means I only need to straighten up to hit the next apex, whilst Dirk has to lift a tiny amount in order to turn into the second apex.

I have now gained 4mph because I can straighten up sooner whilst Dirk is still scrubbing speed.



This shows an entire lap of Spa, where my lap is represented by the red line, and Dirk's by the blue. The top graph is a speed trace, which allows you to optimise your braking points and see where more speed can be carried.

The bottom graph shows the 'delta' time for the lap. This shows where Dirk lost time in his lap in comparison to mine. The position of the dotted cursor line is half way through Eau Rouge.

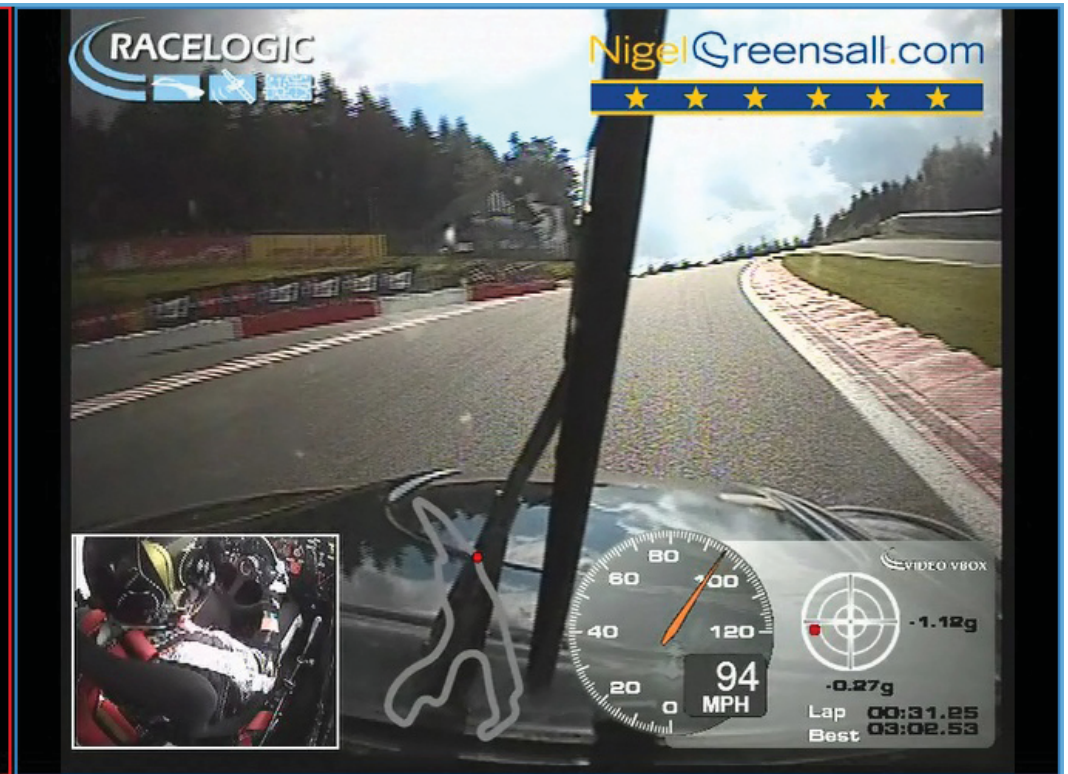
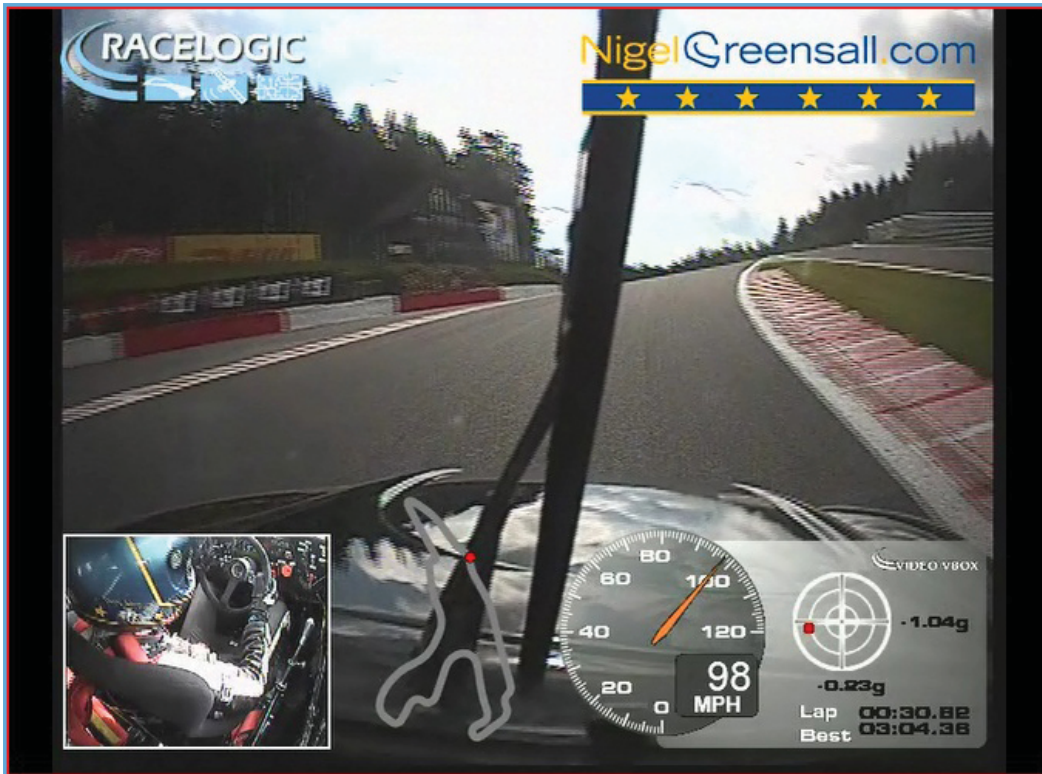
Before this Dirk and I are almost neck and neck, but it is clear that he loses considerable time in comparison to me on Eau Rouge. This impacts the rest of his lap, meaning that he is 5.6s slower than me in the practice session. However once we had looked at this simple data and seen how Dirk could improve his fast corner technique, he was able to take 2.5s off his lap-time in the race that followed!

It's possible to see this delta time live in the car with **RACELOGIC's** new predictive lap timer, which connects to a **VIDEO VBOX**. The predictive lap-timer takes your (or another driver's) best lap and shows you a real time, easy to glance at graphic on an **OLED DISPLAY** of where you are losing or gaining time in comparison. The graph screenshots are taken from **RACELOGIC's CIRCUIT TOOLS** software, which is included with **VIDEO VBOX**.



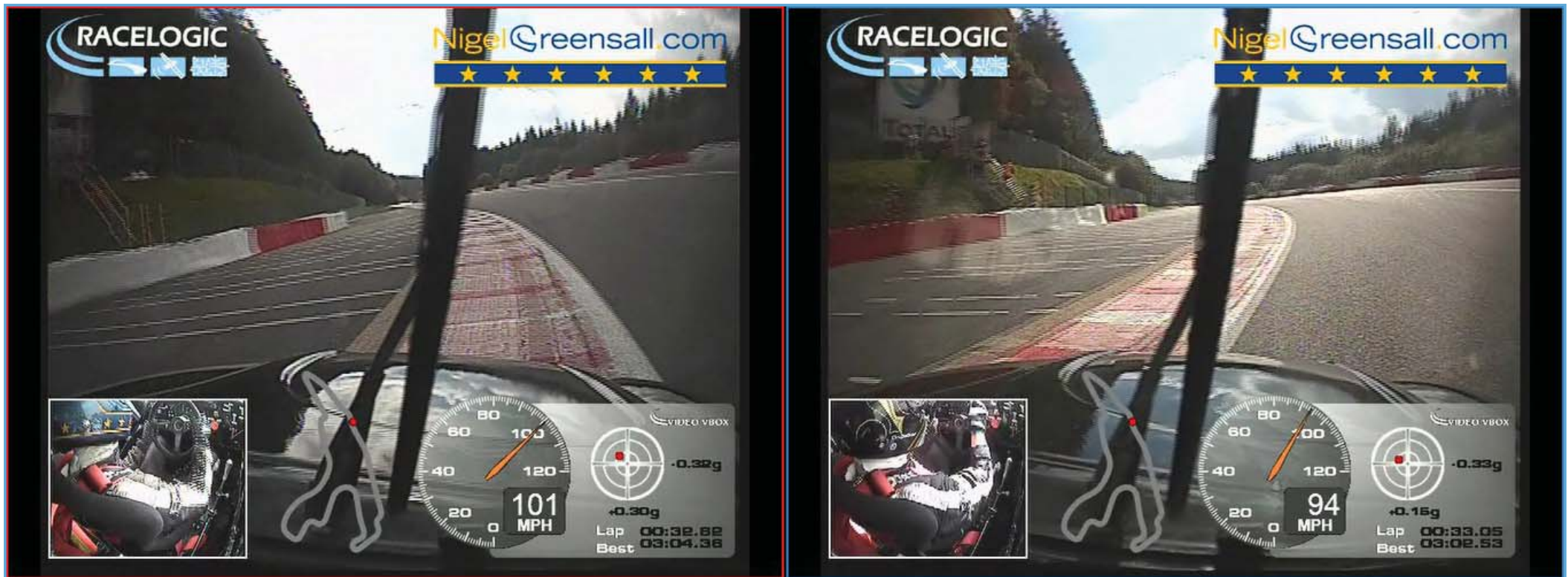
Radillon

In the apex of the second corner of Eau Rouge (Radillon) you can see in the screenshots that I am again using more of the track, driving over the curbing in order to straighten the fast corner. Whilst the speed of the two cars is now the same, at 100mph, I am in a better position to carry this into the next apex.



Exiting Radillon

0.8 of a second later and Dirk (right hand screenshot) has lost 6mph because he is turning tightly, due to his driving line preparation for the corner. My line in the approach has set me up to release the steering earlier, losing only 2mph.

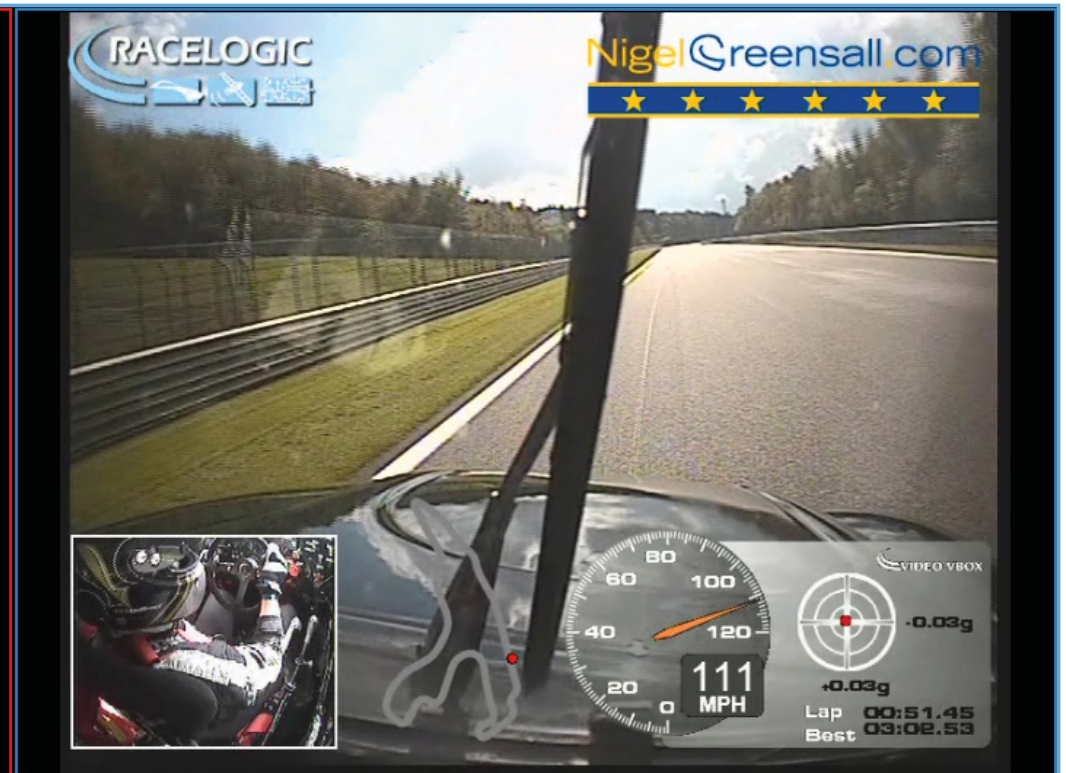
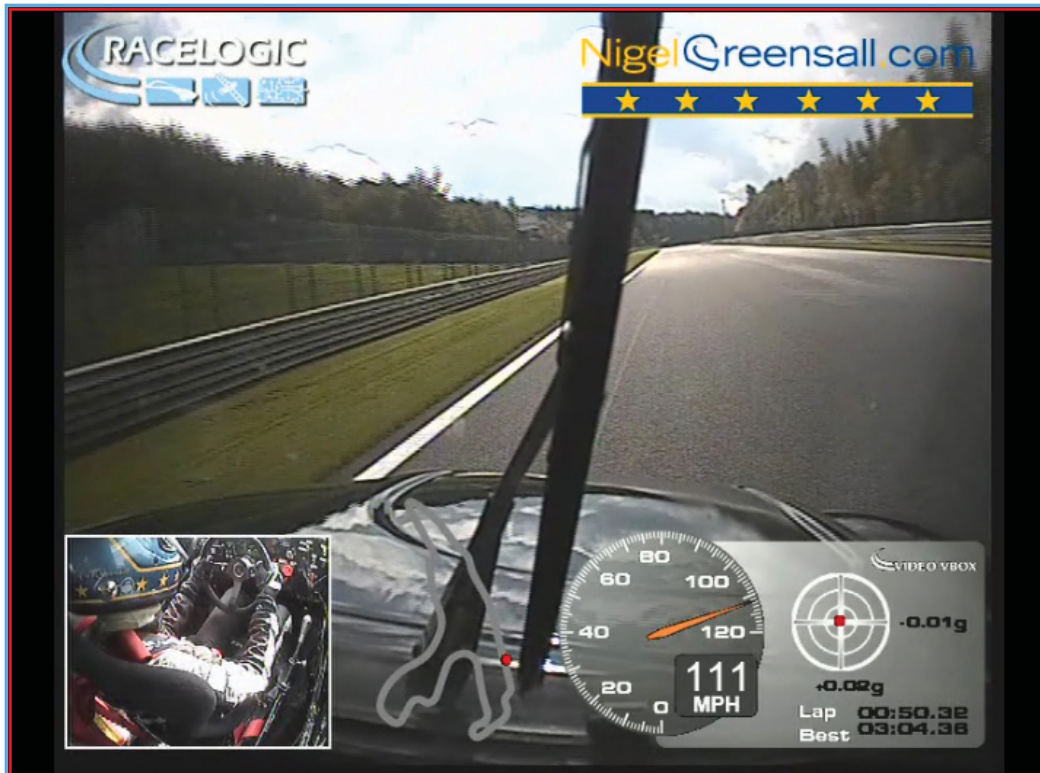


The final apex at Eau Rouge

The differences in steering angle and driving line are clear here, which is why my speed increases to 101mph whilst Dirk stays at 94mph. Again, I am using the whole track by driving over the curbing and making the corner straighter. With less steering lock applied than Dirk, as shown in the picture in picture screens, my car is released to travel in a straighter line and I am able to build speed, with 0.15g more acceleration than Dirk.



At the exit of the Eau Rouge complex and onto the start of the Kimmeline Straight I am going 7mph faster than Dirk. The difference in speed is due to my driving line, keeping away from sources of aerodynamic drag, making the corners straighter, and keeping steering input to a minimum.



The end of the Kimmel Straight

By the end of the kilometre long Kimmel Straight both our speeds are the same (111mph – the top speed of our FunCup car). However if you look at the lap time in the bottom right hand corner of each screenshot, you can see that I have gained an entire second (00:50.32 compared to 00:51.45) over Dirk.



So how did I gain a second on Eau Rouge?

- I kept away from the aerodynamic drag of the wall after La Source in the approach to Eau Rouge
- I used every inch of available space, with just two wheels on the track through each apex
- I kept steering input to a minimum in order to release the car to gain speed

Despite being a very competent racer, due to his driving line Dirk had to lift very slightly in the entrance to Eau Rouge. This lift was barely perceptible, and equated to 0.1s increase in lap time. The rest of the 1 second deficit in time was due to the differences in our steering technique, straightening out every corner. This was worth 0.9 of the second"

Watch a video of the corner here:

<http://www.youtube.com/watch?v=9IeBx6EAQGA>



We hope you've enjoyed reading this article, and that it has provided an interesting insight in to how one racing driver approaches fast corners and the legendary Eau Rouge in particular. There are, of course, many ways to tackle a fast corner, and looking at the video and data quickly shows which are the most effective!

All data and video in this article was recorded with **VIDEO VBOX**, and the data screenshots were taken from the intuitive **CIRCUIT TOOLS** software which comes included with every **VIDEO VBOX**.

VIDEO VBOX incorporates a GPS and video data logger with customisable graphic overlay, and is designed and manufactured by **RACELOGIC**.

More information and the online shop is available on www.videovbox.co.uk

You can add your thoughts to the discussion on the **RACELOGIC** forum here.