

The Williams FW34 negotiates
Monte Carlo's notorious chicane



Quick comeback

Williams was a rejuvenated team in 2012; in mid-season
Ian Bamsey asked the team's Mark Gillan how that came about

Williams underwent a major turnaround of its fortunes in 2012. In 2011 the team had slumped so much that it didn't once finish in the top eight, scoring only five points during the entire season. In 2012 though it stormed through to confound the pundits by winning the fifth race, the Spanish Grand Prix at Barcelona, its first victory since 2004.

From the perspective of the Williams racecar, there were two major changes for 2012. Out went Cosworth as engine supplier and in came Renault, while there was also a new technical regime, with Mike Coughlan coming in as technical director, Jason Somerville as head of aerodynamics and Mark Gillan as chief operations engineer. They arrived during 2011, in time to steer the evolution of the FW34 for the 2012 season. *F1 Race Technology* spoke to Gillan after the superb win in Spain (he subsequently left the team in December 2012).

The FW34 wasn't a radical departure from its predecessor but it was better in many respects, and overall it proved to be a far superior platform for development. In particular, according to Gillan, it reacted to development and set-up changes in a way that the FW33 had failed miserably to do. At the same time, the 2012-specification Pirelli tyres

were proving to be a steep learning curve for everyone in the paddock, which helped Williams in as much as it was able to get things right at Barcelona while other teams, who in normal circumstances would probably have been ahead of it, struggled.

Surprisingly, in these days of frozen engine specifications and when there isn't a clear differentiation in horsepower between the four competing engines, Gillan described the impact of Williams' switch from Cosworth to Renault as "quite significant". As he explained, "The Renault engine has in effect zero degradation – or only very slight, at least – which is impressive. Fuel consumption is very good, and its cooling requirements are really low. So as a package it is very strong."

Gillan said the cooling aspect definitely helped the team improve aero performance, while Williams also detected improvement in engine output and driveability. Moreover, he said, "The whole transition to the Renault engine was seamless, it was like a continuation of a current supplier. For example, right from the first test with the Renault V8, our car ran with hardly any issues in terms of engine-car integration. Our liaison with Renault Sport is very good as well, and obviously there's been a lot of history between us."

Beyond confirming that Williams' in-house developed KERS is a one-box solution using battery energy storage, Gillan declined to provide any technical details. He did say though that, for the FW34, it was an evolution of the system used in 2011 and that it proved very reliable from the outset. That evolution addressed weight but also cooling, "ensuring that we can use it to its maximum all the time, all the way through a race".

So how did it impact on the braking of the car? "For the driver you want the KERS system to be transparent. That's something we work hard on, in terms of the control of the KERS system and its integration to the car. We made big strides on that over the winter [of 2011-12]."

So when he's braking, the driver doesn't actually know whether he's using KERS or conventional brakes because they work together seamlessly, is that right? "Yes, it's going the way of minimising any impact on the driver. It's basically that he should not be aware of the operation of the KERS, and obviously for different circuits you adjust the system accordingly."

The most notable feature of Williams' 2011 car was its impressively compact gearbox, which slung the final drive low at the back, all for aero gain. Gillan confirmed that the 2012 car used an evolution of that design. "Obviously a lot of design effort had gone into last year's rear end of the car. And the packaging was very impressive, especially from the aerodynamic perspective. We didn't want to reinvent the wheel as such but there are a few areas we improved on. Essentially the concept is very similar though."

Which are the areas you improved on? "Mainly in terms of installation. Last year the whole car concept wasn't performing as we would have liked, and there were a number of problems that we highlighted, but I wouldn't want to go into specifics."

Gillan added, "With this gearbox the back end is tiny, and that opens up a lot of possibilities aerodynamically. And I would say that with this gearbox and the Renault engine the cooling performance of the car is very good. Early on we ran the FW34 in Valencia, where we had high ambient temperatures, and we confirmed that our cooling

requirements were significantly less than in 2011. That is due to the engine and gearbox requirements but also the layout of the car."

In 2011, Williams' seven-speed, seamless change gearbox, which lives in an aluminium housing, carried a rear suspension with an unusual Z-leg arrangement, which was dropped for 2012. Gillan said, "The FW34 rear suspension is a modification of that of the FW33 – a lot of that is aero-driven. There is a bit of iteration between the aerodynamics and the people designing the suspension though."

Otherwise, the front and rear suspension were not substantially changed from the FW33 to the FW34. Other teams were exploiting an hydraulic interlinking of the front and rear suspension in 2012. Gillan remarked, "We've looked at it and it probably gives a small benefit – we will certainly look into it further."

In terms of the aero package, the big difference was the enforced loss of an exhaust location that could maximise the activation of the diffuser by its discharge.

Gillan remarked that, certainly in the first quarter of the season up to the win at Barcelona, "exhaust blowing is a magnitude of order less than it was". He added, "There are a lot of different approaches to exhaust blowing [down the pit lane], which would tend to indicate that there's not much in it now, so the new rule's had an impact."

Has this given the car more oversteer, more wheelspin? "It's definitely impacted on the balance of the car. Last year the blown floor stabilised the car in the corners so it's become more difficult to get that traditional aerodynamic balance. But certainly the cars these days are pretty benign compared to what they used to be aerodynamically. It's like any change: the drivers adapt pretty quickly."

How did Gillan find the characteristics of the 2012 Pirelli tyres? "From the beginning, there was a good development from 2011. Our car this year compared to last year is much easier on the tyres, which gives us a lot more options in the race. We have a good consistency from the tyres. The 2012 tyres have a particular band that they work well within, and the challenge is ensuring the car is within that window. Other teams have the same issue. You see quite large fluctuations in performance through an event for certain teams because they may be dipping in and out of that operating window. That's a technical challenge this year."

Overall though, is your car working better on this year's than last year's tyre supply? "Yes. I think the current tyres are an improvement over last year's, and our car is better than last year's. The two combined mean that, compared to last year, we can certainly do things strategy-wise that were just not feasible last year, when we were much harder on the tyres."

How did you feel your car's tyre usage has been relative to other cars this year? "Relative to other teams it seems we are pretty good, and the car is pretty good in all conditions," Gillan said.



The Williams FW34 in the rain at Silverstone