

Beat: Automobiles

## New F1 W06 Hybrid Silver Arrow

### MERCEDES AMG PETRONAS

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**USPA NEWS** - The MERCEDES AMG PETRONAS Formula One Team today unveiled its 2015 Formula One World Championship challenger, the F1 W06 Hybrid, ahead of the first day of pre-season testing at the Circuito de Jerez in Spain.

Daren Frankish media | © 2015 Daimler AG.

Drivers Lewis Hamilton and Nico Rosberg revealed the seventh Silver Arrow to compete in the Formula One World Championship to the assembled media, with Nico then taking the wheel for the opening test session of the 2015 season at the Spanish circuit. 2015 marks the beginning of an evolutionary process for the cutting-edge Hybrid racing formula introduced for 2014. But the word evolution shouldn't mask the scale of the change this represents: the regulatory requirements and opportunities, coupled with ambitious internal performance targets, mean that this winter has been as challenging as ever. The more stable the rules, the more innovative a team must become to deliver performance from each generation of racing machine.

"From outside, winter might look like a rest time in Formula One. But this couldn't be further from the truth," explains Toto Wolff, Head of Mercedes-Benz Motorsport. "Long before the end of last season, development work on our 2015 car became the main priority. The winter months are the most intense, with everybody at Brackley and Brixworth working around the clock to prepare for the season ahead. Their dedication is inspiring. It would be so dangerous to rest on our laurels after 2014 "" but none of us have any sense that things will be easier now.

On the contrary, our motivation is as high as ever. There's a famous Babe Ruth quote I always say to people: "Yesterday's home runs don't win today's games". We are fully aware that success is not only hard won but can also be short-lived without the right approach.

"A lot of things have been put in place "" not by one individual but by many individuals working as a team. And this has been about taking the right decisions at the right time, trying to avoid mistakes and, if they do happen, quickly analysing why.

Even if, on paper, things are looking good, we will not fall into the trap of being overly optimistic or trying to make crystal ball predictions because this is not how the sport works. In fact, this is possibly the most brutally honest sport because the stopwatch never lies.

"The launch of a new car is an exciting moment for everybody involved. To see the product of all that hard work turn a wheel for the first time is a great source of pride "" and rightly so. However, there is a long road ahead before we reach the first race.

We must build a fast, reliable racing car to be able to compete with rivals whose ability and competitiveness can never be underestimated. At this point, every team is on zero points. The only thing we know for sure is that we have consistency in our driver line-up for the third year running and they know what's expected of them, just as we know what they expect from us. We're looking forward to seeing them push each other and the team forward. It will be another fascinating battle between the two but we must wait until Melbourne until we know if we have provided them with a car that allows them to fight each other for wins."

As the age of Hybrid power evolves, so the requirements for improved safety, reliability, efficiency and performance increase. An intensive design phase combining incremental gains and targeted innovation has produced the F1 W06 Hybrid, a car which delivers mechanical, structural, aerodynamic and weight saving developments over its predecessor, the F1 W05 Hybrid.

"The key factor from our perspective is avoiding complacency," says Executive Director (Technical), Paddy Lowe.

"Expectations are now high and a lot of assumptions are being made about our potential this season. Internally, however, we are fully aware that you can never afford to stand still in any sport "" particularly Formula One. We are up against competitors with a great history of success and, like us, they will not be content unless they are winning. As the old motor racing adage goes, you are only as good as your last race.

This time last year, with the new Hybrid technology yet to hit the track, we went to Silverstone for a filming day and were genuinely surprised to see the car drive out of the garage! Second time around we may be over the initial hurdles of the new formula but we keep them fresh in our minds, as it demonstrates that nothing can be taken for granted. The only thing that is in our control is the ability to do the very best we can in every area.

“Of course, like every other team on the grid, we have been pushing harder than ever to find areas for performance gains. But at the same time, we must ensure we are moving in the correct direction. One of the risks with car development is that attempting forward steps can easily turn into rearward steps. You have to take risks to progress “” but those risks must be carefully managed in order to produce a car that is better than its predecessor. This has been an underlying theme for the team over the winter.

“It is an evolutionary process and this also includes the regulations themselves. Relative to last winter, these have remained reasonably stable into 2015. But this is certainly not to say that the cars we see take to the track in Jerez will be near-replicas of their predecessors. Some changes will be more visually obvious, of course, but the devil is in the detail. Beneath the covers there have been a raft of developments from both a chassis and Power Unit perspective “” all aimed at creating a car that is safer, more efficient, more reliable and ultimately faster.

With the Hybrid era still very much in its infancy, there is plenty of scope for innovation. The challenge at this stage is to find the key areas for performance gain based not just on what we have learned a year further down the line, but also on where there is room for exploring new and innovative sources of competitive advantage. “” Having first entered Formula One in 1995, PETRONAS celebrates 20 years of competition in 2015 “” and a double decade of experience in honing its fuel and lubricant expertise for the race track and the road.

PETRONAS has been central to the team’s performance since becoming Title Partner and key Technical Partner in 2010, with a dedicated technology team working on the design, development and delivery of bespoke PETRONAS Primax race fuel, PETRONAS Syntium engine oil, and PETRONAS Tutela fluids “” testing chemistries in real engines to deliver ultimate performance.

Following the announcement of revolutionary regulation changes for the 2014 Formula One season, PETRONAS spent more than three years working closely with the Team to engineer a brand new range of customised fuels and lubricants with a competitive edge in the new Hybrid era. The success story of 2014 proved that they were on the right track with their formulations.

Now, with a limit of four Power Units per driver, per season in 2015 compared to the five permitted in 2014, the demands on both PETRONAS Primax fuel and PETRONAS Syntium lubricants are greater than ever. The key to meeting these challenges has been PETRONAS Fluid Technology Solutions “” an intelligent approach to fluid requirements that maximises performance through tailor-made product offerings and expert services.

For the new season, PETRONAS has developed a fuel which enhances protection of the engine, provides better combustion and improves driveability. The fuel prevents engine damage by cleaning and protecting the critical high-pressure direct injection system and sensitive engine parts; the fuel formulation has been optimised to provide better combustion by enhanced energy release; and the advanced energy formula has been designed to ensure good driveability for superior acceleration “” all while building upon the efficiency gains already achieved in development for the previous season.

With its increased power per litre of displacement, the 1.6 litre Internal Combustion Engine (ICE) of the Hybrid era also runs hotter than its 2.4 litre predecessor. This requires lubricants that do not get too thin under high temperatures and resist oxidation “” balanced with a requirement to minimise friction within the ICE for reduced fuel consumption.

The engine oil must therefore possess distinct thermal characteristics to withstand higher operating temperatures and cylinder

pressures, and be optimised to effectively contribute to cooling. The use of Energy Recovery Systems (ERS) also brings the challenge of heat dissipation, requiring an ERS fluid that cools the system effectively. Equipped with a unique formulation to defend against extreme temperature and maintain optimum engine performance, PETRONAS Syntium proved to be a winning formula in 2014, with PETRONAS scientists also translating its advanced technology into the formulation of ERS fluid.

During the course of the 2014 season, PETRONAS upgraded its on-track chemical analysis to gain greater insight into the changes occurring in the oil within the engine under extreme conditions ““crucial to the demands of adhering to a limited quantity of units per season. This has given key insights into how to further improve lubricant performance in terms of heat management, friction reduction and hardware durability. As a result, PETRONAS has formulated a new engine oil that is now undergoing testing with the option for adoption during the 2015 season.

With Formula One Power Units now aligned to downsized, turbocharged road car engines, this intensive research and development becomes particularly pertinent. Designed to enable engines to perform optimally in the most extreme of conditions, the unique formulation of PETRONAS Primax, PETRONAS Syntium and PETRONAS Tutela products addresses engine needs both on and off the race track. After all, it is not just Lewis Hamilton and Nico Rosberg who need their vehicles at their best ““ but everyday drivers all over the world.

“We have been working hard on all areas of the Power Unit to increase the conversion efficiency of every single system ““ trying to make our package more thermally efficient and produce greater absolute power“[?], says Andy Cowell, Managing Director, Mercedes AMG High Performance Powertrains. “The focus in this respect has been on combustion efficiency and frictional losses ““ be they in core parts of the ICE or the ancillary aspects of both ICE and ERS. Development of fuel and lubricants has been critical to this process and we have continued working well with PETRONAS in this respect.

“Every manufacturer on the grid did a fantastic job in 2014 in terms of achieving high thermal efficiency and therefore performance from the fixed fuel flow rate. The numbers speak for themselves: a reduction from 150kg to 100kg of race fuel; downsizing from a 2.4 litre V8 to a 1.6 litre V6 ICE; creating a package that was over 30% more efficient than its predecessor ““ all within a set of regulations that pushed reliability to the very limit.

“It’s very much a case of evolution rather than revolution in 2015. Where last year was a case of “‘Can we do it?’ we are now faced with a different challenge ““ ‘How do we improve it?’ Everybody has the opportunity to change a significant portion of the Power Unit for 2015 to further improve efficiency and, once again, performance “We’re all also pleased and excited to have another Power Unit manufacturer, Honda, joining Formula One.

This is good news for the sport, for the competition, for the fans and for the automotive industry as a whole. We therefore offer them a warm welcome and wish them well. Also, we are very much enjoying working with our new partners at Lotus. They are a strong addition to our roster of partner teams and we look forward to working together in the seasons ahead“[?]

For the second consecutive season, MERCEDES AMG PETRONAS will be the only front-running team on the grid to field an unchanged driver line-up. After a titanic battle between the pair throughout the 2014 season, both Lewis Hamilton and Nico Rosberg have been hard at work in preparation for the season ahead and are relishing the challenge of 2015: “The winter break was a good chance to relax. I was working right up until mid-December and had been in the factory earlier that day but then had a couple of weeks away skiing before getting straight back into training after Christmas“[?], says Lewis.

“It’s never great to get back into that routine but it has to be done and my motivation was not lacking in any way, which is a really positive sign.

“You hear about people who achieve a lot but then lose their focus and you wonder; at what point does it fade off? I’m grateful that the fire is still there in me. I think subconsciously the taste of success spurs me on ““ I like that feeling and I want to feel it again and again.

I'm not going to sit here and say I don't feel like I've won two World Championships "" but I'm a racer. I'm glad me and Nico had the battle we did last year. I love winning races but it just feels so much better when you have to fight for it.

I just want to get back out there, race hard, be the best I can be and hopefully win some more.

"But just because you've had success before, it's never easy to just carry it on. We've probably made it harder for ourselves with the way things went last year "" it isn't easy to improve on something that was already so strong when the rules haven't really changed. But we know there are areas we can improve and I know everyone wants to come back even stronger. I've seen the guys at the factory pushing like crazy to put everything together, so it just goes to show that you can't ever really be comfortable.

Hopefully we're on the right path. It's not until the end of the last test that you start to get a feel for where the car might be "" and even then you don't know for sure. You can never rule anybody out and we'll be keeping an eye on the others as always. Unfortunately for them we have an amazing team and it will be tough to match the work these guys do "" but not impossible. We have to take things one step at a time and hope that at the end of those 20 big steps in the season we're ahead."?

"It's been a great winter, although it has actually seemed very long to me"?, says Nico. "The lucky thing about this sport as a driver is that you get a lot of down time between each season to rest, recharge, spend time with the family and really hit the training hard. But now I am eager to get back to work and go maximum attack for another season. I know the feeling of winning and of fighting for a Championship after last year "" but I also know the feeling of not winning in the end and I don't want to repeat that. It's an extra boost and it gives me so much motivation for the year ahead.

"I'm so proud to be in this moment with the team "" coming off the back of a fantastic year, putting the Silver Arrows right back at the front where they belong. It will be massively tough to repeat what we achieved in 2014 but we all want to keep that momentum going and to dominate the sport for many years to come. We know the opposition will be right there, so we have to keep pushing flat out to have any chance of doing that. Nothing is for certain but, whatever happens, I know it will be another great battle with Lewis. This year is the rematch for me and I'm massively motivated for it.

"It's always a really exciting time around the launch "" getting to drive the car for the first time, having our first insight into what's new, how it feels, how hard we can push straight away. Getting into what the set-up parameters are doing, making a few changes, getting a feel for how it behaves. I know so much about the new car from my time at the factory "" but only on paper. Getting out there and driving it properly in testing will be an awesome feeling. This is where we build our experience and knowledge for the first race and it's so important to get that baseline right. Melbourne is a long way off but I'm feeling good in myself and confident in this team because, to put it simply, they're just a great group of people to work with.

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