THIS DOCUMENT HAS A STRICT EMBARGO TIME AS BELOW. EARLY COPIES MUST NOT BE DISTRIBUTED.

US:	*Sunday 1 February*	*20:00 ET*
UK:	*Monday 2 February*	*01:00 GMT*
Europe:	*Monday 2 February*	*02:00 CET*
Japan:	*Monday 2 February*	*10:00 JST*

THE 2015 NISSAN GT-R LM NISMO

The Nissan GT-R LM NISMO is the ultimate Nissan GT-R, the purest expression of innovation that excites. Competing in LM P1, the premier class of world sports car racing, Nissan's Le Mans car is like no other car before it.

A truly global effort, the GT-R has been created by a team of carefully selected experts in Japan, the US and Europe. Unlike other LM P1 cars, the GT-R's V6 3-litre twin turbo petrol engine sits in the front of the front-wheel-drive car, while the hybrid power is harvested from the front driveline to augment acceleration.

The man best placed to describe Nissan's innovative LM P1 car is Ben Bowlby, Nissan's LM P1 Team Principal and Technical Director.

Is it true that the Nissan GT-R LM NISMO could become the most powerful car on the grid in 2015?
"We're up to around 1250bhp with 550+ from the petrol engine and around 700+ from hybrid power and those are relatively conservative figures. We can't speak about our rivals but this is definitely an arms race and this is just phase one."

Can you explain where all of that power is coming from?
"We have a very modern but conventional V6 3-litre twin turbo petrol engine. This is a very efficient engine so it produces a large amount of power – around 550bhp – using the allotted fuel flow limit. The fuel flow limit is one of the new regulations at Le Mans – we're not limited by the engine capacity or the boost pressure or the RPM of the engine – we're limited by how many grammes of fuel per second we can burn. So the more efficient you make the engine the more power you have because you are still burning the same amount of fuel whether you are efficient or inefficient so if you can make a very efficient engine you get a lot of power. We are burning a smaller amount of fuel, around 30% less than was used by a petrol engine at Le Mans in 2013, for example.

"So we have a petrol engine efficiently producing around 550bhp and then in addition to that we are using a kinetic energy recovery system (ERS). The car is a mass, travelling at velocity and as we slow it down for the upcoming corner we harvest that kinetic energy.

"We can then deploy that stored energy to accelerate the car out of the corner and because the energy recovery system can release the stored energy very quickly it makes it very powerful. Energy divided by the speed you release that energy = power. Think about a stick of dynamite. That's actually quite a small amount of energy but it is released in a spilt second so it makes a very big bang. The same amount of energy released over a day would hardly even manage to power a light bulb. So it's all about how fast you release the energy. We want to release the energy very quickly to get the car back up to speed very quickly because it's nice to spend lots of time at high speed! The key is to store the energy and then release it very quickly and that's what makes our system very competitive, providing us with 700+bhp from the ERS, which we can add to the internal combustion engine's driving power to create a 1,250bhp racing car."

Is the GT-R a front-wheel-drive car?

“The Nissan GT-R LM NISMO is in automotive-speak a front-engined, front-wheel-drive car. The internal combustion engine drives the front wheels and the energy recovery system harvests energy from the front wheels. We’ve used the relatively low-powered internal combustion engine to drive the front wheels and then we add power from the ERS to augment acceleration.”

If the GT-R has all this power, will it be faster than the other manufacturer’s LM P1 cars?
“The LM P1 regulations for manufacturers have four hybrid powertrain options, defined by how much hybrid energy is released from the ERS per lap of Le Mans (the Le Mans track is used as the baseline circuit). You can go in the 2 megajoule class where you can deploy up to 2MJ of energy during one lap of Le Mans and also use quite a lot of fuel. You can go in the 4MJ class and get a little less fuel, the 6MJ class with less still and then there’s the 8MJ class where you get the least fuel of all but the most recovered energy for deployment and there’s no limit on how powerful the system is, just how much energy is used so you can either have an awful lot of power for a very short time or a small amount of power for a very long time.

“The fuel energy you have, which again can be measured in megajoules, gets cut in proportion to the amount of megajoules you get from your ERS. The way it is worked out by the governing body – the FIA and the ACO – is that if you choose to recover more energy and deploy that you actually end up with more total energy, even though your fuel energy has been cut slightly. The more megajoules you have the faster you go. Each megajoule is worth an amount of time per lap so if you are an 8MJ car compared to a 2MJ car you should be faster over the course of a lap.

“There are however some very big challenges, one of which is that you have to get the car down to the minimum weight because every 10-12 kilos is about half a second a lap around Le Mans so if you have more weight in the car that slows you down pretty significantly. The challenge is to package a big, powerful energy recovery system without going over the weight limit and that is very hard to do. We’re going to be really challenged to make our weight target of 880 kilos for 2015 when half of the weight of the car is the powertrain: engine, ERS and the driveline - so that’s a very big challenge.”

What about the tyres? The rears look narrower than the front tyres!
“The front tyres on the Nissan GT-R LM NISMO are bigger than the rear tyres – 14 inch wide front vs. 9 inch rear. This is due to the way that mass is distributed in the car. We have moved the weight bias forwards to give us traction for the front-engined, front-wheel drive. We’ve also moved the aero forwards so we’ve moved the capacity of the tyres forward to match the weight distribution. So the aero centre of pressure, the mass centre of gravity and the tyre capacity are all in harmony and that means we have bigger tyres at the front than the rear.”

Has the unique configuration of the GT-R allowed you to innovate with the aerodynamics of the car?
“Yes, we have an interesting aerodynamic innovation. We have used the fact that there is no engine driving the rear wheels to allow us to have a through duct aerodynamic solution. We duct the air that comes from underneath the front splitter – underneath the nose of the car – all the way through to come out above the diffuser at the back of the car. That’s a solution that is very efficient in terms of low drag so rather than dump the air out sideways - you’ve seen all those louvres on the sides of the other LM P1 cars that let the air out from underneath the front of the car to the sides – we don’t do that because it’s a bit draggy so we duct it all the way back and dump it out over the top of the diffuser at the back.”

Why doesn’t the Nissan GT-R LM NISMO look like the other manufacturer’s LM P1 cars?
“The regulations have allowed us the freedom to create a significantly different looking car. Nissan are bold challengers who are prepared to innovate in order to get a high performance outcome so we’ve turned the whole concept of the conventional LM P1 car of 2014 on its head. The result is that our car looks different as the cockpit has been moved significantly rearwards to accommodate the engine at the front of the car.”

ENDS